

***MONOCOTYLEDONOUS PLANTS OF MANIPUR TERRITORY**

D. B. DEB

Botanical Survey of India, Eastern Circle, Shillong.

ABSTRACT

This paper gives an account of the monocotyledonous plants growing in Manipur. In all 426 species (+ 8 varieties) representing 219 genera and distributed over 33 families have been dealt with. Hutchinson's system has been followed in arranging the families. Efforts have been made to find out the correct names in accordance with the latest International code of Botanical nomenclature. Only relevant and commonly used synonyms have been cited wherever required, immediately below the valid names. Citation of the original publication of the valid name has been made excepting several cases where the original paper concerned was not available to the author, for scrutiny.

A short description indicating the characteristic of the species has been given. A short ecological note has been added. In citation of the herbarium specimens, preference has been given to the author's personal collection. Others' collections have not been cited completely. Species recorded by earlier workers from Manipur, but not examined by the author have also been cited in this paper.

INTRODUCTION

The state of Manipur, at present a centrally administered territory, lies between 23°47' - 25°41' N. and 93°61' - 94°48' E. It is bounded on the north by the Naga Hills, on the south by the Chin Hills, Burma and the Lushai Hills (Mizo District) and on the west by Cachar and North Cachar Hill District of Assam. The area of the territory is about 22372 Sq. km. of which about 1813 Sq. km. form the central valley.

The major portion of the territory consists of ranges of hills with a north and south general trend. In the centre lies the valley which is about 48.3 km. in length and 32.2 km. in breadth. The general aspect of the hill ranges is that of irregular serrated ridges occasionally rising into conical peaks and flattened cliffs. The hill ranges attain their greatest height to the north east, about 80 km. from Imphal, rising to about 360 km. above the level of the sea. There is a steady decrease in the height of the hill ranges towards the south and the north.

The rivers Thoubal, Iril and Imphal take their rise in the hills to the north and north-west. In the eastern hills there are numerous small streams which drain the Yu and thence into the Chindwin. The principal rivers in the western hills are the Barak and its tributary, the Irong.

The Logtak is the largest lake. In winter it is a little more than a large deep swamp. Numerous jheels lie in the valley, many of which dry up completely in winter.

Normal annual rainfall at Imphal (797.3 m.) is 122 cm., at Kangpokpi (1046 m.), 45 km. north of Imphal, it is 160 cm., at Ukhrul (1876 m.), 70.8 km. to the east, it is 175 cm., at Tamenglong (1156 m.), 110 km. to the north west of Imphal, it is 398 cm., at Moreh, it is 201 cm. Figures within bracket indicate the altitude of the places. A little rain falls at the end of February, the rate increases gradually and reaches the maximum in

July and then gradually decreases up to October, after which practically there is no rain.

The temperature is lowest in January coming down to -1.66°C. It rises steadily and reaches the highest, at 34.44°C., in September and then comes down. Mean of daily humidity is highest (91%) in August and lowest (49%) in March.

Geologically the country is of recent origin. The upper tertiary continues through Mapum and Poshing to Kopamedza range in the Angami Naga land. Kasom range and Nungshong khong are of cretaceous age. Soil is recent alluvium in the valley. At the base of the hills, it is derived from sand stone rocks, the upper layer of which contains deep humus. At Langal, it is ferruginous clay to clayey loam.

Not much is known about the monocotyledonous plants of Assam region. The Flora of Assam (Kanjilal and others, 1934-40) is not complete in this respect. Only the *Gramineae* (Bor, 1940) has been published upto now. Other families of monocotyledons of several restricted areas have been enumerated from time to time, most important of which are 'On the Plants of Kohima and Munneypore' (Clarke, 1889), 'The Botany of Abor Expedition' (Burkill, 1924), 'Flora of Lushai Hills' (Fischer, 1926), 'Flora of Aka Hills' (Biswas, 1946).

Earliest publication on the plants of Manipur is that of Clarke (l.c.) who recorded only 76 species distributed over 15 families of monocotyledonous plants. Watt (1890) made a casual reference of only 10 species. Manipur as habitat was cited in Flora of British India (Hooker, f. 1872-97), on the basis of collection from Manipur by Sir G. Watt in 1880-81 and C. B. Clarke

* Materials for this paper are taken from the D. Phil. thesis of the author, worked out as a Lecturer and Head of the Department of Botany, D. M. College, Imphal, Manipur; the manuscript in the present form was prepared while working as the Senior Lecturer-in-charge, Department of Botany, M. B. B. College, Agartala, Tripura.

in 1885. Kaith (1932, '36) named several plants belonging to *Gramineae* and *Palmae*, Kingdon-Ward (1949) described the characteristics of several liliaceous plants. Mukerjee (1953) enumerated 72 species of orchids of Ukhrul.

The author (Deb, 1955) studied the Flora of Manipur in the field from 1951 to 1955. Besides his personal collection, the author examined most of the collections of G. Watt, C. B. Clarke, A. Meebold (of 1906-7) and S. K. Mukerjee, in the Indian Botanic Garden (now the Central National Herbarium), Calcutta. The author also examined the herbarium specimens of Dr. N. L. Bor in the Assam Forest Herbarium (at present in the Eastern Circle, Botanical Survey of India), Shillong. But as the particulars of the specimens were not noted down, the author is not in a position to give the full citation of the sheets.

The present paper gives an account of the monocotyledonous plants growing in Manipur. In all 430 species (+8 varieties) representing 219 genera distributed over 33 families have been dealt with. A short note indicating the characteristics of the species in most cases has been given. Short ecological notes also have been added. In citation of the herbarium specimens, preference has been given to the author's personal collection. Other collections have been cited only casually. Species recorded by earlier workers from Manipur, but not examined by the author nor collected by him have also been included in this paper quoting the reference.

Hutchinson's system (1934) has been followed in arranging the families. The genera and species have been arranged in alphabetical order within the family.

Efforts have been made to find out the correct names in accordance with the latest *International Code of Botanical Nomenclature*. Only relevant and commonly used synonyms have been given wherever required, immediately below the correct names. Citation of the original publication of the correct name has been given excepting in several cases where the original paper concerned was not available to the author for verification and scrutiny.

The proportion of species of Monocotyledons and Dicotyledons in the world is about 18.70 and 81.30 respectively and that in the Flora of India is approximately 1:2.3; in world phytogeography, the proportion of genera to species is 1:2.3, the proportion of genera to species for India is 1:7. In Manipur the ratios are 1:3.64 and 1:3.40 respectively.

The dominant families of Monocotyledons in order of abundance are listed below indicating the number of genera and species they contain.

Sl. No.	Name of the family.	No. of genera.	No. of species.
1.	<i>Gramineae</i>	72	117 (+1 var.)
2.	<i>Orchidaceae</i>	41	89 (+1 var.)
3.	<i>Cyperaceae</i>	9	41 (+1 var.)
4.	<i>Liliaceae</i>	16	25 (+2 var.)
5.	<i>Araceae</i>	11	23
6.	<i>Zingiberaceae</i>	9	23

Of the 33 families of Manipur Monocotyledons, 6 contain more than 22 species each; 2 contain 10-20 sp., 6 contain 5-10 sp., 14 contain 2-6 sp., and 5 contain 1 sp. each. Again only 5 families contain more than 10 genera each, 4 contain 5-10 genera each, 4 contain 3-4 genera each, 6 contain 2 genera each, and 14 families contain 1 genus each.

Of the total no. of species, Gramineae & Orchidaceae together contain about 47% of the species.

58 species grow in aquatic and marshy habitats, i.e., they constitute about 13.65% of the total No. of monocot. plants.

The author does not claim to have enumerated all the monocotyledonous plants growing in Manipur, but considers that the publication of this list will be of material assistance to botanists and others interested in the area, and it is hoped that it may stimulate residents in the territory to make further botanical researches.

Specimens collected by the author from Manipur cited in the paper have been presented to the Deptt. of Botany, D. M. College, Imphal, Manipur; a duplicate set will be presented to the Regional Herbarium, Eastern Circle, Botanical Survey of India, after the publication of the paper; some specimens have been preserved in the Central National Herbarium, Calcutta.

HYDROCHARITACEAE

HYDRILLA VERTICILLATA (Linn. f.) Royle Illustr. Bot. Himal., f. 376, 1839.

Aquatic floating submerged herb with small simple linear-elliptic whorled leaves. Flowers minute, monoecious or dioecious. Very common in ponds, jheels, lakes etc. *Deb* 557, 1995 & 2003.

HYDROCHARIS DUBIA (Bl.) Backer, Handb. Fl. Java 1: 64, 1925.

H. asiatica Miq. Fl. Ind. Bot. 3: 239, 1856.

Aquatic perennial herb; leaves fleshy glabrous, in clusters at the short stem which penetrates deeply in the mud. Imphal. *Deb* 2387.

NECHAMANDRA ALTERNIFOLIA (Roxb.) Thw. Enum. Pl. Zeyl. 332, 1864.

Lagarosiphon alternifolius (Roxb.) Druce

Vallisneria alternifolia—Roxb.

Lagarosiphon roxburghii Benth.

A submerged aquatic slender herb with distant alternate linear leaves. Flowers unisexual dioecious. Very common in the valley. *Deb* 2388.

OTTELIA ALISMOIDES (Linn.) Pers. Syn. Pl. 1:400, 1805.

Leaves variable in shape, submerged, oblong with tapering base or oblong-lanceolate and about 30 cm. long or orbicular or oblong and cordate on long succulent 2-edged petioles. Flowers white peeping through the surface of water, with the perianth, exerted from a

crisped winged spathe. Very common in slowly running streams, ponds and jheels. *Deb* 413.

VALLISNERIA SPIRALIS Linn. Sp. Pl. 1015, 1753.

Submerged tufted stoloniferous herb with very long linear leaves up to 30 cm. long. Flowers dioecious. Male flowers very numerous, minute in shortly peduncled spathes. Female flowers solitary. It is found only in Wangjing. *Deb* 2729.

ALISMATACEAE

ALISMA PLANTAGO Linn. Sp. Pl. 342, 1753.

Scapose aquatic or amphibious herb showing heterophylly with linear, lanceolate, cordate or sagittate leaves. Flowers bisexual, white or pale-yellow arranged in branched whorls on a pyramidal panicle. Very common in shallow water all over the territory up to an altitude of 1800 m. *Deb* 1131.

CALDESIA PARNASSIFOLIA (Linn.) Parl. Fl. Ital. 3: 599, 1858.

Alisma reniformis D. Don, Prod. Fl. Nepal. 22, 1825.

A herb growing in marshes. Leaves orbicular, ovate with rounded or retuse apex. Flowers bisexual in a pyramidal panicle, white or pink purple. Fairly common in marshes in the valley. *Deb* 2021.

SAGITTARIA GUAYANENSIS H.B. & K. Nov. Gen. et Sp. 1: 250, 1816.

A herb with leaves broadly ovate, deeply cordate, obtuse or rounded with rounded auricles. Petiole, scape and pedicels hairy. Flowers white. Found all over the territory in marshy land. *Deb* 1277, 1869 & 3714.

S. SAGITTIFOLIA Linn. Sp. Pl. 993, 1753.

An aquatic stoloniferous herb with the leaves in deep running water strap-shaped when floating with lanceolate or elliptic blades and in shallow water with a hastate or sagittate blade. Petiole trigonous. Flowers white with purple centre. Forms large societies in marshy land and shallow water. In deep water it produces heterophylly. Common in the territory. *Deb* 508.

TENAGOCHARIS LATIFOLIA Buchen. in Goett. Nachr. 238, 1869.

Butomopsis lanceolata Kunth

A herb up to 60 cm. high, with erect lanceolate or elliptic leaves with very long petiole, enclosed by sheaths below. Scape with a single terminal whorl of several flowers. A plant of marshy and amphibious habit, fairly common up to an altitude of 1800 m. *Deb* 1956.

POTAMOGETONACEAE

POTAMOGETON CRISPUM Linn. Sp. Pl. 126, 1753.

Aquatic; stem branched; leaves lanceolate, sub-amplexicaul, 3 nerved crisped and finely toothed trans-

lucent, submerged. Flowers very small, spicate, greenish, or a lateral peduncle arising above the surface of the water from a membranous spathe. Common in ponds, lakes and jheels forming large societies. *Deb* 2002.

P. NODOSUS Poir. in Encyc. Meth. Bot. Suppl. 4: 535, 1816.

P. indicus Roxb. Fl. Ind. 1: 471, 1820.

P. natans Linn. Sp. Pl. 126, 1753.

Aquatic; stem rooting at the nodes; leaves stipulate generally floating elliptic lanceolate, midrib prominent; spike erect, protruded above the surface of water; very common; forming large societies in old ponds; height of the plant depends upon the depth of water. *Deb* 1260, 2731.

NAIADACEAE

NAIAS GRAMINEA Del. Fl. Egypt. 282, 1812.

A slender submerged grasslike aquatic herb with a slender creeping root and filiform branched stem. Leaves up to 2.5 cm. with numerous minute oblique spirules on each side, with sheathing bases. Flowers of both sexes naked. Very common in drains and jheels. *Deb* 2576.

N. MINOR All. Fl. Pedem. 2: 221, 1785.

A very slender submerged aquatic plant with filiform dichotomously branching stem. Leaves linear, recurved and attenuate to tip, toothed, with sheathing bases. Male flowers only with a spathe. Anthers 1-celled. Common in marshes, ponds and lakes. *Deb* 579.

COMMELINACEAE

ANEILEMA SCABERRIMUM Kunth, Enum. Pl. 4: 69, 1843.

A stout herb with large lanceolate or oblong leaves. Flowers blue in large axillary and terminal panicles. Jiri. *Meebold* 6217.

COMMELINA BENGHALENSIS Linn. Sp. Pl. 41, 1753.

A herb with creeping stems rooting at the lower nodes. Leaves ovate or elliptic ovate, obtuse at the tip and suddenly contracted at the base. Flowers small, blue. *Meebold* 6195.

C. OBLIQUA Buch.-Ham. ex D. Don, Prodr. Fl. Nep. 45, 1825.

A branched herb erect or creeping and rooting at the lower nodes; leaves variable lanceolate, acute. Spathes conduplicate with margins connate; flowers blue. This is the most common species of this family in Manipur. *Deb* 164, 320, 1452, 417 & 1961.

C. SALICIFOLIA Roxb. Hort. Beng. 5. 1814 nom-nud. & Fl. Ind. 1: 172. 1832; C. B. Clarke, Commel. & Cyrt. Beng. 12, t. 2, 1874.

A diffuse slender herb with long branches and internodes; leaves linear lanceolate sheaths ciliolate; spathes lanceolate, axillary; flowers small, dark blue; solitary. Frequently found in wet places. *Deb.* 2428; *Mukerjee* (1948); *Meebold* 5963.

C. SIKKIMENSIS C. B. Clarke in DC. Mon. Phan. 3: 147, 1881 & Commel. & Cyrt. Beng. f. 6. 1874.
Stout herb. Jirighat. *Meebold* 61956.

CYANOTIS BARBATA D. Don, Prodr. Fl. Nep. 46, 1825.

Stems 15-45 cm. often tufted, hairy; leaves linear lanceolate; flowers in small helicoid cymes and enclosed in a biseriate falcate imbricating bracts; dark blue. Common up to 2100 m. *Deb* 623, 796, 1444.

FLOSCOPA SCANDENS Lour. Fl. Coch. 193, 1790.

A scandent herb with elliptic-lanceolate leaves; sheaths ciliate. Flowers lilac, in dense terminal panicles. Jirighat & Makru. *Meebold* 6192.

FORRESTIA GLABRATA Hassk. in Flora 47: 630, 1864.

A low herb growing in waterlogged clayey soil, up to 2400 m. *Deb* 2197, 2502; *Meebold* 6623.

F. HOOKERI Hassk. in Flora 47: 629, 1864.

A herb. Laimatak. *Meebold* 10855.

MURDANNIA DIVERGENS (Cl.) Brück. in Engl. & Prantl, Nat. Pflanzenfam. (ed. 2) 15(a): 173, 1930.

Aneilema divergens C. B. Clarke.

Small herb; stem simple, nearly glabrous. North Manipur, 1050 m. ex C. B. Clarke in J. Linn. Soc. 25: 79, 1889.

M. ELATA (Vahl) Brück, l.c.

Aneilama lineolatum Kunth

A stout herb with large lanceolate or oblong amplexicaul leaves. Flowers blue in large axillary and terminal panicles with marcescent bracts. Common along the hill path. *Deb* 965; *Mukerjee* 3410; *Meebold* 6350.

M. NUDIFLORA (Linn.) Brenan.

Aneilema nudiflorum R. Br.

A herb with many slender branches decumbent and rooting at lower nodes. Leaves linear-lanceolate acute or sub-obtuse, sheath bearded. Flowers small blue or purple in terminal or leaf opposed few flowered cymes. Seprameina and Nungba. *Deb* 1130 & *Meebold* 6350.

POLLIA ACLISIA Hassk. Commel. Ind. 55, 1866.

A herb. Kanglatongbi, 900 m., *Meebold* 36888.

P. PENTASPERMA C. B. Clarke in DC. Mon. Phan 3: 129, 1881.

A herb. Maohing and Koupru, 2100 m. *Deb* 1004 & *Meebold* 6649.

P. SUB-UMBELLATA C. B. Clarke in Journ. Linn. Soc. Bot. 11: 451, 1871.

North Manipur, ex C. B. Clarke (l.c.)

STREPTOLIRION VOLUBILE Edgew. in Tran. Linn. Soc. 20: 90, 1851.

A climber. Bishenpur. *Meebold* 6412.

S. VOLUBILE Edgew. var. KHASIANA Clarke in Hook. f. Fl. Brit. Ind. 6: 389, 1894.

A climber. Karong ex C. B. Clarke (l.c. 79)

XYRIDACEAE

XYRIS INDICA Linn. Sp. Pl. 42, 1753.

Tufted herbs with radical linear or subulate leaves and axillary and terminal simple naked scapes sheathing at the base, with a terminal bisexual head of small sessile flowers in the axil of dark coloured imbricating bracts. Flowers yellow. Marshy places at Imphal. *Deb* 2448.

ERIOCAULACEAE

ERIOCAULON SIEBOLDIANUM Sieb. & Zucc. ex Steud. Syn. Pl. Cyp. 272, 1855.

Eriocaulon setaceum Auct. non Linn.

Annual, amphibious, herb with numerous radical subulate or setaceous leaves. Heads small, globose. Common in drying pools and drains. This species seems to have a number of ecological varieties, dependent upon the moisture content of the situation. *Deb* 2581.

E. TRUNCATUM Buch.-Ham. ex Mart. in Wall. Pl. As. Rar. 3: 29, 1832.

An annual marsh herb with leaves tapering from base to apex, closely striate. Flowers very minute, bracteate in involucrate capitate scapose heads, unisexual monoecious. Common in marshy places. *Mukerjee* 3637.

BROMELIACEAE

ANANAS COMOSUS (Linn.) Merr. Interpret. Herb. Amb. 133, 1917.

Pine-apple, cultivated often in gardens in small or large scales in slopes of hills. *Deb* 2449.

MUSACEAE

MUSA NAGENSIIUM Prain in J. Asiat. Soc. Beng. 73: 21, 1904.

This is observed under cultivation in front of some houses at Imphal. Needs confirmation.

M. PARADISIACA Linn. Sp. Pl. 1043, 1753.

Plantain; cultivated for fruits. *Deb* 2378.

M. SAPIENTUM Linn. Syst. (ed. 10) 1303, 1759.

Banana cultivated for fruits. Quality appears to be inferior. *Deb* 2377.

ZINGIBERACEAE

CAUTLEA LUTEA Royle Ill. Bot. Himal. 361, 1839.

Small herb; leaves long pointed. Frequently occurs in rocky hills. *Deb* 1006.

COSTUS SPECIOSUS (Koen.) Smith in Trans. Linn. Soc. 1:249, 1791.

Manipuri name—'Khongban takhelai.'

Erect perennial up to 2 m. high. Leaves elliptic oblong upto 30 cm. long, silky beneath. Flowers large white and pink terminating the leafy stem in dense heads with scarlet ovate bracts. Flowers of both the colours are not borne by the same plant. Distributed in moist localities in bushes and forests. *Deb* 321.

CURCUMA AMADA Roxb. in As. Res. 2:341, 1810.

Stem rhizomatous, pale yellow. Leaves oblong-elliptic ending in a short fine somewhat twisted cusb. Spikes arising from the centre of the leaf tuft. Common at the outskirts of forests. *Deb* 1016.

C. AROMATICA Salisb. Parad. Lond. t. 96, 1807.

Rhizome with aromatic ginger smell. Leaves elliptic-oblong with the base passing gradually into the winged petiole with a finely twisted apex. Flowering stem distinct, spicate. Corolla white. Koupru, 900-1200 m. *Deb* 2281.

C. DOMESTICA Valetton in Bull. Jard. Bot. Buitenz. 27(2): 31, 1918.

C. longa Auct. non Linn.

Stem rhizomatous, aromatic yellow inside. Leaves glabrous. Spikes short. Flowers yellow. Cultivated for the dried rhizome. *Deb* 2734.

ELETTARIA CARDAMOMUM Maton in Tran. Linn. Soc. 10: 254, 1811.

Recently introduced by the Agriculture Department of the territory. *Deb* 2376.

GLOBBA HOOKERI C. B. Clarke ex Baker in Hook. f. Fl. Brit. Ind. 6: 202, 1894.

Herb. Maohing 10500 m. *Deb* 983.

G. RACEMOSA Smith, Exot. Bot. 2:115, 1805.

Herbs with erect stem up to 1m. high, with oblong elliptic-oblong leaves. Flowers yellow in narrow panicles. Common in moist and shaded clayey localities, in the valley. *Deb* 422.

HEDYCHIUM CORONARIUM Koenig in Retz. Obs. Bot. 3: 73, 1783.

A stout rhizomatous herb. Leaves lanceolate large variable in breadth. Flowers white or yellow, fragrant in dense imbricately bracteate terminal capitate spikes. Cultivated in gardens. *Deb* 337.

H. GREENII W. W. Smith. var. *UROPHYLLUM* W. W. Smith in Rec. Bot. Surv. Ind. 4:272, 1911.

Flowers yellowish. Nongmaiching. *Deb* 819.

H. LUTEUM Hort. Angl. ex Link Enum. Hort. Berol. 1:443, 1821.

A herb. Imphal. *Deb* 28.

H. MARGINATUM C. B. Clarke in Journ. Linn. Soc. 25: 75, 1889.

A herb. Flowers orange red. Nongmaing, Waifai. *Deb* 782 & 832.

H. SPECIOSUM Wall. ex. Roxb. Fl. Ind. 1: 13, 1820.

A herb. Imphal. *Deb* 337.

H. SPICATUM Buch.-Ham. ex Smith in Rees, Cyclop. 17: n. 3.

Herb growing at foot hills. Flowers yellow. *Deb* 1370.

H. STENOPETALUM Lodd. Bot. Cab. t. 1902.

A herb about 2m. high. Leaves elliptic-oblong with large ligule, spikes elongate, cylindric, not very dense. Flowers white. Burma road (27th mile). *Deb* 1369.

H. THYRSIFORME Buch.-Ham. ex Smith in Rees Cyclop. 17: n. 4.

A herb with inclined stem. Spike erect; leaves oblong and oblong-lanceolate. Imphal. *Deb* 290.

H. VILLOSUM Wall. in Roxb. Fl. Ind. 1: 12, 1820.

A herb. Moreh. *Deb* 682.

HITCHENIA CAREYANA Benth. & Hook. f. Gen. Pl. 3: 643, 1883.

A herb. West Manipur. ex C. B. Clarke (l.c.)

KAEMPFERIA Sp.

A herb. West Manipur. 225 m. ex C. B. Clarke (l.c. 75)

ZINGIBER CAPITATUM Roxb. in As. Res. 2:348, 1810.

An aromatic herb with leafy stem, distichous linear leaves, spikes terminating the leafy stem. In slopes of the foot hills. Shugnu. *Deb* 2650.

Z. CASSUMUNAR Roxb. in As. Res. 2:348, 1810.

A large aromatic herb with lanceolate to linear-oblong leaves. Ligule of 2 small lateral auricles and a line of hairs between. Corolla white. Nongmaiching. *Deb* 815.

Z. OFFICINALE Rosc. in Trans. Linn. Soc. 8:348, 1807. Manipuri name 'Sing'.

Rhizomatous herb with erect leafy stem. Leaves narrow distichous subsessile, linear lanceolate. Cultivated for the rhizome. *Deb* 2733.

ZINGIBER ZERUMBET Rosc. in Trans. Linn. Soc. 8: 348, 1807.

A rhizomatous herb with leafy stem. Leaves elliptic-lanceolate ending in a finely acuminate end. Flowering in the rainy season.

CANNACEAE

CANNA INDICA Linn. Sp. Pl. 1, 1753.

Perennial rhizomatous herb with large penninerved leaves and brightly coloured flowers in spike. Grows wild.

C. FLACCIDA Rosc. in Trans. Linn. Soc. 8: 339, 1807.

Rhizomatous herb. Flowers larger than that of the former. Commonly cultivated in gardens. *Deb* 168, 170, 726 & 1776.

MARANTACEAE

CLINOGYNE DICHOTOMA Salisb. in Trans. Hort. Soc. 1: 276, 1812.

Herb in marshy shaded regions. Very rare. Jhiri.

MARANTA ARUNDINACEA Linn. Sp. Pl. 2, 1753.

A branched herb with fleshy rootstock. Jhiri. *Watt* (no. lacking).

STACHYPHRINIUM IMBRICATUM (Roxb.) K. Schum. in Engl. Pflanzenreich, 11: 46, 1902.

Phrynium imbricatum Roxb.

Leaves oblong, caudate, or cuspidate; base round petiole slender, much longer than the blade; flowers white in narrow spikes. West Manipur [C. B. Clarke (l.c. 76)].

LILIACEAE

ALLIUM CEPA Linn. Sp. Pl. 300, 1753. Local name 'Tilhau'.

The stem is modified to a bulb. Leaves fistular. Flowers greenish white. Cultivated for edible bulbs. *Deb* 2756.

A. SATIVUM Linn. Sp. Pl. 296, 1753.

The stem is modified to a bulb. Leaves flat, linear with sheaths about half their length. Cultivated for edible bulbs. *Deb* 2755.

A. TUBEROSUM Roxb. Hort. Beng. 24, 1814 nom. nud. & Fl. Ind. 2: 141, 1832.

Bulbs cylindric seated on a rhizome. Leaves narrow linear compressed or 3-gonous. Flowers white. Cultivated for edible bulbs. *Deb* 2757.

ASPARAGUS FILICINUS Buch.-Ham. ex D. Don, Prod. Fl. Nep. 49, 1825.

Stem erect, hollow, unarmed. North Manipur ex C. B. Clarke (l.c. p. 78).

A. FILICINUS Buch.-Ham. var. BREVIFIPES Baker in Journ. Linn. Soc. 14: 605, 1875.

A branching climber. In forest exposures, where it forms bushes. *Deb* 1175.

A. FILICINUS Buch.-Ham. var. LYCOPODINEUS Baker, l.c.

A branching climber forming a bush. Mao, 2100-2400 m. *Deb* 1711.

A. RACEMOSUS Willd. Sp. Pl. 2: 152, 1799. Local name 'Nungarei'.

A slender scrambling or scandent suffruticose plant with reflexed spines. Common in thickets in open country. *Deb* 253.

CARDIOCRINUM GIGANTEUM Makino in Bot. Mag. Tokyo 27: 124, 1913.

Lilium giganteum Wall.

Herb. Stem, 3 m. high; flowers in June-July. Ukhrul ex K. Ward (l.c.).

CHLOROPHYTUM ARUNDINACEUM Baker in Journ. Linn. Soc. 15: 323, 1876.

Small herb with lanceolate leaves and erect dense flowered racemes on grassy slopes in open country, at Maohing. *Deb* 995.

C. UNDULATUM Wall. ex Hook. f. Fl. Brit. Ind. 6: 335, 1894.

Chlorophytum nepalense Baker

North Manipur, 1050 m. ex C. B. Clarke (l.c. p. 78).

DIANELLA NEMOROSA Lamk. Encycl. 2: 276, 1790.

Dianella ensifolia Red.

A stout herb with linear distichous leaves laterally compressed at the base. Common throughout Manipur. *Deb* 1088, 1336; *Meebold* 5563.

DISPORUM CALCARATUM D. Don in Tran. Linn. Soc. 18: 516, 1841.

A creeping herb; branches long thick. Common in temperate forests, at 1860-2250 m. *Deb* 1648 & *Meebold* 6200.

D. PULLUM Salisb. in Trans. Hort. Soc. 1: 331.

A stout herb dichotomously branching above. West Manipur. *Meebold* 10825.

HETEROSMILAX INDICA A. DC. Mon. Phan. 1: 43, 1878.

A much branched climber, common in forest escapes as undergrowth. *Deb* 1166.

LILIUM DAVIDI Duch. in Elwes. Monog. Gen. Lil. t. 24, 1880.

A herb. Ukhrul ex Kingdom Ward (l.c.).

L. MACKLINIAE Sealy in Journ. Roy. Hort. Soc. 74: 349, 1949.

A herb, commonly known as "Siroheelily".

- PARIS POLYPHYLLA Smith in Rees, Cyclop. 26 ; n. 2 ;
Herb. North Manipur, 1650 m. ex C. B. Clarke (l.c.).
- PLEOMELE ANGUSTIFOLIA N. E. Brown in Kew Bull.
1914: 277, 1914.
Dracaena angustifolia Roxb.
An erect shrub with cylindrical stem. Leaves linear,
sessile with sheathing base. Leimatak. *Meebold* 6440.
- P. ELLIPTICA N. E. Brown in Kew Bull. 1914: 278, 1914.
Dracaena elliptica Thunb.
An erect shrub with cylindrical stem. Leaves elliptic-
lanceolate. Leimatak, 1500-1800 m. *Meebold* 5562.
- P. SPICATA N. E. Brown in Kew Bull. 1914: 279, 1914.
Dracaena spicata Roxb.
This species does not grow wild in the valley and its
surrounding hills. West Manipur ex C. B. Clarke (l.c.).
- POLYGONATUM MULTIFLORUM Allioni Fl. Pedem. 1:131,
1785.
Small herbs ; flowers—white. Very common in hill
slopes and along forest paths, in and around the valley.
Deb 1317 & 791.
- P. OPPOSITIFOLIUM Royle, Illustr. Bot. Himal. 1:380,
1833.
Herb. Flowers white in rains. Common along foot
hills. *Deb* 747.
- P. VERTICILLATUM All.
Herb. North Manipur ex C. B. Clarke in J. Linn. Soc.
25:78, 1889.
- SMILACINA FUSCA Wall. Pl. As. Rar. 3:37, 1832.
A small herb looking like Smilax. Common in the
valley. *Deb* 463.
- TUPISTRA BAKERIANA Watt ex C. B. Clarke (l.c.).
North Manipur ex Watt l.c.
- T. WATTII Hook. f. Fl. Brit. Ind. 6:325, 1894.
Campylandra wattii C. B. Clarke in J. Linn. Soc.
25:78, 1889.
North Manipur, 1800-2100 m. *Watt* (no. lacking).
- YUCCA GLORIOSA Linn. Sp. Pl. 319, 1753.
Woody stem rarely exceeding 1 m. with terminal
cluster of ensiform leaves. Panicle large with bellshaped
white flowers. Cultivated in gardens. Often found as an
escape also. *Deb* 93.
- MONOCHORIA HASTATA (Linn.) Solms-Laub. in A. DC.
Mon. Phan. 4:523, 1883.
Perennial fresh-water, marshy and aquatic herb.
Root-stock stout creeping and rooting below. Flowers
brilliant purplish blue ; common. *Deb* 231.
- M. VAGINALIS Presl Reliq. Haenk. 2:128, 1830-36.
Aquatic or marshy herb with perennial sub-erect or
creeping spongy rootstock, leaves variable. *Deb* 1264.
- M. VAGINALIS Presl var. PLANTAGINEA Solms-Laub. in
DC. Mon. Phan. 4:524, 1883.
A very small plant, leaves linear or narrowly ovate,
racemes few flowered. Waifai. *Deb* 1018.

SMILACACEAE

- SMILAX ASPERICAULIS Wall. ex A. DC. in DC. Mon.
Phan. 1:195, 1878.
Small tendril-climbers. Koupru, 1500 m. *Deb* 1420.
- S. FEROX Walp. ex A. DC. in DC. Mon. Phan. 103, 1878.
Tendril-climber. Scarce. Koupru, 1050 m. *Deb* 2245.
- S. LANCEAEFOLIA Roxb. Hort. Beng. 72, 1814, nom. nud.
& Fl. Ind. 3:792, 1832.
A small slender wiry unarmed climber. Umbels soli-
tary. Nongmaiching up to 1725 m. *Deb* 2230.
- S. MINUTIFLORA A. DC. in DC. Mon. Phan. 1:109, 1878.
A small climber with tendrils. Mao, *Deb* 1850.
- S. MYRTILLUS A. DC. in DC. Mon. Phan. 1:106, 1878.
Climber. North Manipur, 2100 m. (C. B. Clarke
l.c. 77).
- S. OVALIFOLIA Roxb. Hort. Beng. 72, 1814, nom. nud.
& Fl. Ind. 3:794, 1832.
A stout prickly climber. Leaves large, broadly elliptic
or orbicular. Nungba, *Meebold* 6183.
- S. ROXBURGHIANA Wall. ex Hook. f. Fl. Brit. Ind. 6:311,
1894.
A climber having branches terete and branchlets
4-angled, unarmed. Leaf sheaths with large auricles.
Common at lower altitudes along forest paths. *Deb* 410
& *Watt* 7423.
- S. ZEYLANICA Linn. Sp. Pl. 1029, 1753.
Smilax macrophylla Roxb.
A tendril climber, common in secondary scrub forests.
Deb 1332.

PONTEDERIACEAE

- EICHHORNIA CRASSIPES Solms in DC. Mon. Phan. 4:527,
1883.
Aquatic floating, gregarious herb with rosette leaves.
Deb 2238.

ARACEAE

- ACORUS CALAMUS Linn. Sp. Pl. 324, 1753.
An aromatic erect herb ; rootstock thick creeping. In
marshes and river banks. *Deb* 2462.

- ALOCASIA INDICA** (Roxb.) Schott in Oester. Bot. Wochenbl. 4:410, 1854.
Arum indicum Roxb. Fl. Ind. 3:498, 1832.
 A robust herb with caudex attaining 2 m. with about 1 m. long large leaves. Cultivated for suberect thick rootstocks which are used as vegetables. *Deb* 1276.
- AMORPHOPHALLUS BULBIFER** (Roxb.) Bl. in Rumphia 1:148, 1835.
Arum bulbiferum Roxb. Fl. Ind. 3:510, 1832.
 A large herb with tuberous stem. Common. *Deb* 2464.
- A. CAMPANULATUS** Bl. ex Decne. in Ann. Mus. Hist. Nat. Par. 3:366, 1834.
Arum campanulatum Roxb. Pl. Corom. 68, t. 272, 1819.
 A very stout herb; leaves very large 3-partite. *Deb* 1068.
- ARISAEMA CONSANGUINEUM** Schott in Bonplandia 7:27, 1859.
 Dioecious herbs with larger number of narrow leaflets with long filiform ends. *Watt* (no. lacking).
- A. ERUBESCENS** (Wall.) Schott. in Melet. 1:17, 1832, et Prodrum. 53, 1860.
 Erect herb; forms an undergrowth in dense forests, prefers weak light. *Deb* 1925.
- A. PETIOLULATUM** Hook. f. Fl. Brit. Ind. 6:498, 1893.
 An erect herb. Sirohee 2640 m. *Watt* 5917.
- A. TORTUOSUM** (Wall.) Schott. Meletem. 1:17, 1832, et Syn. 29, 1856.
 An erect herb; in shaded regions of the forest; forms an undergrowth. *Deb* 975.
- A. WATTII** Hook. f. Fl. Brit. Ind. 6:498, 1893.
 Mao, 1200 m. *Watt* (no. lacking).
- CALADIUM BICOLOR** Vent. Descrip. Cels. t. 30, 1800.
 Variegated leaves. Cultivated as a pot plant.
- COLOCASIA AFFINIS** Schott in Bonpland. 7:28, 1859.
 Small herb. The leaves form a matted appearance on the ground. Shugnu. *Deb* 2649.
- C. ANTIQUORUM** Schott var. **ESCULENTA** (Linn.) Schott, Syn. 41, 1856.
Arum esculentum Linn. Sp. Pl. 965, 1753.
 A herb of moist and marshy land, giving forth stolons. Common everywhere forming societies on wet soil and along the margins of ponds, jheels and lakes. *Deb* 137.
- GONATANTHUS PUMILUS** (D. Don) Engl. & Krause, Pfreich. IV. 23E:19, 1920.
Gonatanthus sarmentosus Klotz. in Link & Kl. & Oño. Ic. Pl. Rar. 1:33, 1841.
 Very small herb, found in Litan. *Deb* 1091.
- PISTIA STRATIOTES** Linn. Sp. Pl. 963, 1753.
 A floating herb with resettes of sessile obcordate cuneate leaves; vegetative reproduction is very rapid by means of offsets. Commonly in association with *Eichhornia speciosa* Kunth and others. *Deb* 2463.
- POTHOS CATHCARTII** Schott, Aroid. 1:22, 1856.
 Epiphytic; much larger plant than *Pothos scandens* Linn. Koupru. *Deb* 1445.
- P. SCANDENS** Linn. Sp. Pl. 968, 1753.
 Epiphytic suffruticose, much branched. Leaves distichous, articulate to the winged petiole; sometimes it grows round the host so densely that it completely overpowers the host. Moreh & Koupru. *Deb* 678 & 2161.
- P. VRIESIANUS** Schott, Aroid. 1:22, t. 36, 1856.
 Epiphyte. *Deb* 675.
- RHAPHIDOPHORA DECURSIVA** (Roxb.) Schott in Bonpl. 5:45, 1857.
R. eximia Schott in Bonplandia 5:45, 1857.
 Suffruticose climbers with distichous large leaves. Moirang, *Deb* 2232.
- R. GLAUCA** Schott in Bonplandia 5:45, 1857.
 Epiphytic on trees, found in hills up to an altitude of 2100 m. at Koupru. *Deb* 2279.
- R. GRACILIPES** Hook. f. Fl. Brit. Ind. 6:545, 1893.
 Gigantic epiphytic climber reaching the top of big trees in dense forests. Koupru, 1800-2100 m. *Deb* 1491.
- R. LANCIFOLIA** Schott in Bonpland 5:45, 1857.
 Epiphyte, up to 1800 m. *Watt* (no. lacking).
- R. PEEPLA** (Roxb.) Schott in Bonpland 5:45, 1857.
R. callophyllum Schott
 Epiphytic upon big trees. Common between 1500-1800 m. in Koupru. *Deb* 2278.
- SCINDAPSUS OFFICINALIS** Schott, Meletem. 1:21, 1832.
 Gigantic climber.

LEMNACEAE

- LEMNA MINOR** Linn. Sp. Pl. 970, 1753.
 Floating annual; scale like herb. Plant body symmetrical very small not tailed, translucent, root cap obtuse. A cosmopolitan herb floating and colonizing in still water. Propagation is affected usually by means of new fronds growing out of the margins of the old ones or by bulbils. Flowers are rarely produced. *Deb* 2444.
- L. TRISULCA** Linn. Sp. Pl. 970, 1753.
 A floating small plant like the previous ones. Fronds tailed, opaque; rootlets solitary and root caps acute. *Deb* 2446.

SPIRODELA POLYRRHIZA (Linn.) Schleid in Linnaea 13:392, 1839.

Lemna polyrrhiza Linn. Sp. Pl. 970, 1753.

A floating small scalelike annual. Plant body orbicular or thick, 7 veined; root fibrous clustered; fronds larger than the former, both surfaces nearly flat. A cosmopolitan plant of still water in pools, drains, jheels, and lakes. *Deb* 2445.

WOLFFIA ARRHIZA Wimm., Fl. Schles. 140, 1857.

Floating herb; fronds exceedingly small without roots; flowers bursting through the upper surface; spathe none. Common. *Deb* 2447.

TYPHACEAE

TYPHA ANGUSTATA Bory & Chaub. Exp. Sci. Mor. II, 1:338, 1832.

A gigantic gregarious marsh plant 2 m. high, with creeping rhizome clothed with distichous scale and with distichous linear leaves. Flowers unisexual in minute densely crowded cylindrical superposed spikes with upper spike male & lower female, brown in colour. This plant forms societies, pure or in association with *Phragmites karka* Trin. ex Steud., by the side of streams and rivers in and around the valley. *Deb* 963.

AMARYLLIDACEAE

CRINUM ASIATICUM Linn. Sp. Pl. 292, 1753.

A robust herb with bulb and smooth radical leaves. Flowers in umbels, shortly pedicelled. Cultivated in gardens. *Deb* 472.

C. LATIFOLIUM Linn. Sp. Pl. 291, 1753.

This is another bulbous herb flowering before the leaves fully developed, with white flowers more or less streaked with red or purple nectar guides. *Deb* 2731.

PANCRATIUM VERCUNDUM Ait. Hort. Kew. 1:412, 1810.

Bulbous herb with lanceolate radical 2-farious leaves and flowers having a membranous corona uniting the filaments at the base. *Deb* 2732.

ZEPHYRANTHES CARINATA Herb. in Bot. Mag. t. 2594, 1825.

Small herb with narrow grass like leaves cultivated in gardens. *Deb* 2559.

Z. ROSEA Lindl. in Bot. Reg. t. 821.

Small herb cultivated in gardens. Flowers after rains. *Deb* 5.

IRIDACEAE

PARDANTHUS CHINENSIS Ker-Garol. in Kon. & Sims. Ann. Bot. 1:246, 1805.

This is cultivated in gardens, *Deb* 336 & 1128,

IRIS BAKERI Wall? Manipuri name—'Konbirei'.

This species is abundantly found in marshes and water meadows in the Manipur valley, particularly in Lamphel jheel which remains for several months, in rains, under water. With the drying up of the jheel in November, this species grows from December and flowers in thousands, are produced in March when it gives a beautiful hue to the meadow. There is a mythological story concerning this plant, for which flowers are considered very sacred by the local people. This plant is under investigation for final determination. *Deb* 2438.

I. KAMAONENSIS Wall. ex Don in Trans. Linn. Soc. 18:311, 1839.

"Scattered dwarf Iris of a lovely china blue nestling in the grass and sparkling like gems".—Kingdon-Ward.

I. MILESI Baker ex Forst. in Gard. Chron. 2:231, 1883. A large clumped herb; Sirohee ex K. Ward. (l.c.).

I. WATTII Baker ex Hook. f. Fl. Brit. Ind. 6:273, 1892. A herb. Kongoi & Kasom, 1800-2550 m. *Watt* (no. lacking).

ROXBURGHACEAE

STEMONE TUBEROSA Lour. Fl. Cochinch. 404, 1790.

Twiner; rarely found at the outskirts of forests at lower altitude. *Deb* 1389.

STICHONEURON MEMBRANACEUM Hook. f. Fl. Brit. Ind. 6:299, 1892.

West Manipur ex C. B. Clarke in J. Linn. Soc. 25:77, 1889.

DIOSCOREACEAE

DIOSCOREA ANGUINA Roxb. Hort. Beng. 72, 1814, nomen nud. & Fl. Ind. 3: 803, 1832.

A climber with branches densely pubescent. Leaves opposite, broadly ovate cordate, pubescent; flower buds form bulbils. Common in and around the valley. *Deb* 577.

D. BULBIFERA Linn. Sp. Pl. 1033, 1753.

Stem with small crisped wings. Leaves large, suborbicular or broadly ovate. Bulbils common, axillary, roundish, brown with prominent numerous, uniformly distributed tubercle like eye. Flowers white to creamy. A common climber in village scrubs and foot hills. *Deb* 431.

D. GLABRA Roxb. Hort. Beng. 72, 1814, nom. nud. & Fl. Ind. 3:804, 1832.

A climber with opposite leaves deeply cordate at the base or sagittate. Common up to an altitude of 1500 m. *Deb* 1093, 1497 & *Meebold* 6370.

DIOSCOREA HAMILTONII Hook. f. Fl. Brit. Ind. 6:295, 1892.

D. hookeri Prain ex Wood in Rec. Bot. Surv. Ind. 2:143, 1902.

A climber with distinctly angled branches. Male spikes with a markedly zigzag rhachis with a flower at each angle. Nungba 1500 m. *Meebold* 6369.

D. PENTAPHYLLA Linn. Sp. Pl. 1032, 1753.

A slender climber, prickly below with 3-5 foliate leaves. Bulbils elongate obpyriform. A very common plant in village scrubs and foot hills. Flowers—cream coloured and slightly scented. *Deb* 587 & *Meebold* 9147.

D. RUBELLA Roxb. Hort. Beng. 72, 1814, nom. nud. & Fl. Ind. 3:798, 1832.

A climber common at the foot hills. *Deb* 410.

D. WALLICHII Hook. f. Fl. Brit. Ind. 6:295, 1894.

Stem very stout and woody, often thorny below and characterised by hard thick bases of the articulate petioles which are also thorny. Leaves large, suborbicular or broadly ovate. Of all the species of *Dioscoreaceae* found in Manipur, this plant flowers last of all. *Deb* 1190.

AGAVACEAE

AGAVE AMERICANA Linn. Sp. Pl. 323, 1753.

An arborescent plant. Leaves borne above the ground in a massive rosette, 0.9-1.8 m. long and 15-20 cm. broad, thick and heavy, gray, smooth, upcurved, prickly toothed on margins. The inflorescence axis becomes very gigantic up to 5 m. tall with horizontal branches bearing the flowers. Lower flower buds develop into bulbils. This is an exotic plant that has been naturalized in the territory. *Deb* 818.

ALOE BARBADENSIS Mill. Gard. Dict. ed. 8, n. 2, 1756.

Plants with basal, rosette of succulent leaves. Leaves about 30 cm. long, erect, thick and full of juice and spiny teeth on margins. Flowers yellow about 2.5 cm. Cultivated for medicinal properties of the plant. *Deb* 2758.

POLYANTHES TUBEROSA Linn. Sp. Pl. 316, 1753.

A very beautiful plant, the scapes leafy below and 60-120 cm. high from a rhizome with bulbous swellings. Leaves linear. Flowers white, very fragrant, funnel-shaped. Common in gardens. *Deb* 2421.

SANSEVIERIA ROXBURGHIANA Schult. f. Syst. 7:357, 1830. Herb. Cultivated.

S. ZEYLANICA Willd. Sp. 2:159, 1799.

Rhizome horizontal creeping sending up tuft of leaves at intervals. Leaves linear oblong, fleshy, cultivated.

PALMAE

ARECA CATHECU Linn. Sp. Pl. 1189, 1753.

A slender tall palm with annulated stems and a crown of pinnate leaves. Spadices intrafoliar, branched. Very rare. It is generally believed that the local conditions are not favourable for its plantation.

A. NAGENSIS Griff. (?) in Calc. Journ. Nat. Hist. 5:453, 1845.

This is the characteristic Betel-nut of Naga Hills. These plants are said to occur in Mao area. I myself did not collect any specimen.

BORASSUS FLABELLIFER Linn. Sp. Pl. 1187, 1753.

A very large palm, old parts marked with sheath scars. Leaves 1-1.5 m. diam., folded along the midrib. Dioecious. Very rarely cultivated.

CALAMUS ERECTUS Roxb. Hort. Beng. 72, 1814 & Fl. Ind. 3:774, 1832.

A tall stout erect climber. In West Manipur it forms edaphic formation of cane brakes. *Deb* 2206 & *Meebold* 5529.

C. FLORIBUNDUS Griff. in Calc. Journ. Nat. Hist. 5:56, 1845.

A climber. Common. The fruit is sold in market, which is relished by local people. *Deb* 2233 & *Meebold* 5556.

C. LATIFOLIUS Roxb. Hort. Beng. 73, 1814 & Fl. Ind. 3:775, 1832.

A stout widely scandent cane armed with numerous prickles. Leaves very long with the rachis produced into a long flagellum armed with recurved prickles. It forms dense jungles away from villages. *Deb* 2236.

C. LEPTOSPADIX Griff. in Calc. Journ. Nat. Hist. 5:49, 1845.

Stem slender, scandent. Barak forest. *Meebold* 5557. *C. TENUIS* Roxb. Hort. Beng. 73, 1814 & Fl. Ind. 3:780, 1832.

A very slender cane with feathery pari-pinnatisect leaves. Leaf-sheaths with very slender flagellae. It forms dense associations in West Manipur. *Meebold* 5530.

CARYOTA URENS Linn. Sp. Pl. 1189, 1753.

Big tree with large leaves. Cultivated. Rare.

DAEMONOROPS JENKINSIANUS Mart. Hist. Nat. Palm. 3:328, 1831.

Calamus flagellum T. And.

A large climbing cane with large pinnate leaves ending in a long armed flagellum with 3-5 fid claws. Singjam. *Deb* 2237.

LICUALA PELTATA Roxb. Hort. Beng. 25, 1814 & Fl. Ind. 2:179, 1832.

Stem erect with flabellate plicate leaves. Spadices interfoliar, sheathed by tubular coriaceous persistent spathes. This plant is abundantly seen in West Manipur in association with cane brakes. (C. B. Clarke l.c. p. 80)

PHOENIX HUMILIS Royle, Illustr. Bot. Himal. 394, 1839.

Stem about 2 m. closely covered with stamps of fallen petioles. Common in hills known as Date Palm. The Plants are dwarfish and prefer drier regions of hills. *Deb* 87 & 1611; *Meebold* 5554.

P. SYLVESTRIS (Linn.) Roxb. Hort. Beng. 73, 1814 & Fl. Ind. 3:787, 1832.

A tall palm with the trunk covered with the bases of the fallen petioles. Leaves large with long spines. Spathe thick almost woody. Rare. No attempt was made to cultivate the plant in a large scale. Once the attempt is made, it may yield good results. *Deb* 2238.

PINANGA GRACILIS Blume in Rumph. 2:77, 1836.

Tall shrub. Leaves large. Koupru 1500 m. *Meebold* 5000.

WALLICHIA DENSIFLORA Mart. Hist. Nat. Palm. 3:190, 1831.

Stem short. Leaves large, white beneath. Ukhrul and Maram. *Mukerjee* 3180 & *Meebold* 552.

PANDANACEAE

PANDANUS FURCATUS Roxb. Fl. Ind. 2:744, 1824.

This tree grows up to 6-8 m. high and forms small societies in the foot hills, and even in steep and dry habitat; stilt roots are conspicuous. Found in Litan & Ukhrul. *Deb* 926 & *Mukerjee* 3730.

P. ODORATISSIMUS Linn. f. Suppl. 424, 1781.

A gregarious bushy shrub with thick terete stilt-roots; flowers unisexual in spadix, spathes white; flowers with pleasant scent. Common in and around the valley; prefers moist and damp situation. *Deb* 725.

HAEMODORACEAE

OPHIOPOGON CLARKEI Hook. f. Fl. Brit. Ind. 6:268, 1892.

Scapigerous herb. Stem prostrate bearing a terminal tuft of very long slender leaves. Koupru, 1800 m. *Deb* 1416.

O. DRACAENOIDES Hook. f. Fl. Brit. Ind. 6:268, 1892.

A scapigerous herb with creeping and rooting stem. Leaves oblanceolate acuminate, many nerved with slender petiole. Koupru, 2100 m. *Meebold* 6292.

O. INTERMEDIUS D. Don Prodr. Fl. Nep. 48, 1825.

Small herb, perennial with short tufted stem, usually clothed at the base with the remains of old leaves. Leaves variable. Common in shady situation under big trees up to 1800 m. *Deb* 985.

O. MALCOLMSONII Royle ex Hook. f. Fl. Brit. Ind. 6:269, 1892.

Ophiopogon japonicus Wall. (part)

Herb with tufted stem. North Manipur, 1950 m. ex C. B. Clarke in J. Linn. Soc. 25:75, 1889.

O. WALLICHIANUS Hook. f. var. *PAUCIFLORA* Hook. f. Fl. Brit. Ind. 6:268, 1892.

Scapigerous herb with tufted stem. Leaves distichous, recurved, Koupru, 2100 m. *Deb* 1529.

PELIOSANTHES TETA Anders. in Bot. Rep. t. 605, 1811.

A scapigerous herb. Leaves long petiole variable in length. Bracts many flowered. Makru. *Meebold* 5517.

P. VIOLACEA Wall. ex Baker in Journ. Linn. Soc. 17:502, 1878.

A scapigerous herb. Leaves long petioled; bracts single flowered. Mao. *Deb* 1886.

HYPOXIDACEAE

CURCULIGO ORCHIOIDES Gaertn. Fruct. 1:63, t. 16, 1788.

Small herb with lanceolate, plicate leaves and yellow flowers. Common in open country or under the shade of trees in the hills on rocky and dry grounds. *Deb* 790 & *Watt* 7147.

C. RECURVATA Dryand. in Ait. Hort. Kew. (Ed. 2) 2:253, 1811.

Small herb with lanceolate, long petioled, recurved leaves, villous on the under surface. Fairly common in shaded regions of forests. *Deb* 2234 & *Meebold* 6867.

HYPOXIS AUREA Lour. Fl. Cochinch. 200, 1790.

A small herb with elongate and erect rootstock crowned with fibrous remains of old leaves. Dioecious. In open places and grassy slopes. *Deb* 2257 & *Watt* 7433.

TACCACEAE

TACCA LAEVIS Roxb. Hort. Beng. 25, 1814, nomen & Fl. Ind. 2:171, 1832.

A herb. West Manipur ex C. B. Clarke (l.c. p. 76).

BURMANNIACEAE

BURMANNIA CAELESTIS D. Don, Prod. Fl. Nep. 44, 1825.

A very slender herb; stem generally unbranched. This species was observed only in Moreh at Burma border, in grass land. *Deb* 632.

ORCHIDACEAE

- AERIDES VANDARUM* Reichb. f. in Gard. Chron. 997, 1867.
Epiphyte. Flowers with purple tinge, fragrant. Ukhrul. *Mukerjee* 2779.
- AGROSTOPHYLLUM CALLOSUM* Reichb. f. in Seem. Fl. Vit. 296, 1865.
Epiphyte. Common at an altitude of 1050-2400 m. *Deb* 1528, 1894 & *Mukerjee* 3000.
- A. KHASIANUM* Griff. in Calc. J. Nat. Hist. 4:378, t. 19.
Epiphyte ex C. B. Clarke in J. Linn. Soc. 25:72, 1889.
- ANAECTOCHILUS ROXBURGHII* Lindl. Gen. & Sp. Orchid. 499, 1830.
A terrestrial herb. West Manipur. ex C. B. Clarke (l.c. p. 73).
- ANTHOgonium GRACILE* Lindl. Gen. et Sp. Orch. 426, 1830.
Terrestrial. In East and North Manipur. *Deb* 2530 & *Mukerjee* 3303.
- ARUNDINA GRAMINIFOLIA* (D. Don) Hochr. in Bull. N. Y. Bot. Gard. 6:270, 1910.
A. bambusifolia (Roxb.) Lindl.
A terrestrial herb; flowers white with pale violet lip. Very common between 780-1800 m. It forms societies in grasses. *Deb* 94, 806, 1529 & *Mukerjee* 3121.
- BULBOPHYLLUM BICOLOR* (Lindl.) Hook. f. Fl. Brit. Ind. 5:770, 1888.
Epiphyte. *Mukerjee* 3572.
- CALANTHE BILOBA* Lindl. Fol. Orchid. Calanth. 3, 1852.
A terrestrial herb. Lateral sepals 3 nerved. *Mukerjee* 3733.
- C. BREVICORNU* Lindl. Gen. & Sp. Orchid. 251, 1830.
A terrestrial herb. Lateral sepals 5 nerved. Perianth segments yellowish green; lip dull violet. Sirohee and Koupru. *Deb* 1446 & *Mukerjee* 3189 & 3768.
- C. BREVICORNU* Lindl. var. *WATTII* Hook. f. Fl. Brit. Ind. 5:848, 1888.
A terrestrial herb. Flowers purple, lip yellow at base, with 3 small conical lamellae on the disk of the midlobe. Tuisar and Koupru. *Deb* 2230 & *Mukerjee* 3437.
- CIRRHOPE TALUM MANNII* *Mukerjee* in Notes Roy. Bot. Gard. Edin. 21(3):151, 1953.
Bulbophyllum mannii Reichb.
Epiphyte; pseudobulbs from a creeping rhizome. Ukhrul, *Mukerjee*.
- COELOGYNE BARBATA* Lindl. ex Griff. Not. 3:280, 1851.
Epiphyte. Pseudobulb large ovoid; leaves very large, petioled elliptic-lanceolate. Flowers large white. Ukhrul. *Mukerjee* 3842.
- C. CORYMBOSA* Lindl. Fol. Orchid. Coelog. 7, 1852.
Epiphyte. Pseudobulbs short; leaves elliptic-lanceolate. Ukhrul, *Mukerjee* 2812.
- C. FIMBRIATA* Lindl. in Bot. Reg. t. 868, 1838.
Epiphyte, pseudobulbs small ovoid-oblong, distant on a slender rhizome; leaves sessile, lanceolate; flowers cream colour, lip with 2 teeth at throat. Khangkui, *Mukerjee* 3721.
- C. LONGIPES* Lindl. Fol. Orchid. Coelog. 10, 1852.
Epiphyte; pseudobulbs long, slender cylindric; leaves petioled lanceolate. Flowers small, yellow. Common in North & East Manipur. *Deb* 1893 & *Mukerjee* 3439.
- C. OVALIS* Lindl. Bot. Reg. Misc. 91, 1835.
Epiphyte; pseudobulbs distant on a slender rhizome; leaves lanceolate. Ukhrul, *Mukerjee* 3244.
- CRYPTOCHILUS SANGUINEA* Wall. Tent. Fl. Nep. 36, 1824.
Epiphyte; pseudobulbs crowded, 1-2 leaved, petioled. Flowers orange at base, red above. Khayang, *Mukerjee* 3042.
- C. ELEGANS* Bl. in Rumph. 4. t. 47, 1848.
Epiphyte. Leaves very long, narrow. Flowers in dense racemes. Ukhrul, *Mukerjee* 3622.
- CYMBIDIUM GRANDIFLORUM* Griff. Notul. 3:342, 1851.
Epiphyte. Leaves very long, narrow; scape robust decurved. Flowers large. Lamdam & Chammu, *Mukerjee* 3640 & 3068.
- CYPRIPEDIUM INSIGNE* Wall. ex Lindl. Coll. Bot. t. 32; 1861.
Terrestrial herb with a leafy stem, plaited ligulate leaves and terminal flowers. Ukhrul ex Kingdon-Ward in J. Roy. Hort. Soc. 37:43, 1948.
- DENDROBIUM CANDIDUM* Wall. ex Lindl. in Bot. Reg. Misc. 36, 1838.
Epiphyte; stem slender erect, terete, leaves lanceolate. Flowers violet, lip yellow above, on the leafless stem on a short sheathed peduncle. Phangum, *Mukerjee* 2855.
- D. CARINIFERUM* Reichb. f. in Gard. Chron. 611, 1869.
Epiphyte; stem short tufted, leafy; sheaths sparsely hairy; leaves linear oblong. Nongbi Road, 1530 m. *Mukerjee* 2727.
- D. CHRYSOTOXUM* Lindl. in Bot. Reg. t. 19, 1847.
Epiphyte; flowers yellow, lip deep orange; common in the valley and the surrounding hills. *Deb*. 409 & *Mukerjee* 2908,

- DENDROBIUM DENUDANS* D. Don, Prod. Fl. Nep. 34, 1825.
Epiphyte; perianth segments white, lip chocolate. Ukhrl, *Mukerjee* 3620.
- D. ERIAFLORUM* Griff. Notul. 3:316, 1851.
Epiphyte. Ukhrl, 1530 m. *Mukerjee* 3479.
- D. LITUIFLORUM* Lindl. in Gard. Chron. 372, 1856.
Epiphyte. Perianth segments violet at base and apex, white at middle; lip with deep yellow patch at the middle. Tolloi, 1440 m. *Mukerjee* 2879.
- D. LONGICORNU* Lindl. Gen. et Sp. Orch. 80, 1830.
Epiphyte. Khanghui, 1800 m. & Tosen 2300 m. *Mukerjee* 3660 & 3587.
- D. MOSCHATUM* Wall. ex D. Don, Prod. Fl. Nep. 34, 1825.
Epiphyte. Perianth segments white with violet lips, lip white violet at base within. Lamdam, *Mukerjee* 2849.
- D. NOBILE* Lindl. Gen. et Sp. Orch. 79, 1830.
Epiphyte. Ukhrl, 1800 m. *Mukerjee* 2741 & 2814.
- D. OCHREATUM* Lindl. (in Wall. Cat. 7410, 1831) et Bot. Reg. t. 1765.
Epiphyte. Flowers deep yellow, lip chocolate near base. Phungum 1800 m. *Mukerjee* 2856.
- D. PORPHYROCHILUM* Lindl. in J. Linn. Soc. 3:18, 1859.
Epiphyte. Ukhrl, 1800 m. *Mukerjee* 3420.
- D. PULCHELLUM* Roxb. ex Lindl. Gen. et Sp. Orch. 82, 1830.
D. dalhousieanum Wall. in Paxt. Mag. 11:145, 1844.
Epiphyte. Ukhrl, 1800 m. *Mukerjee* 2811.
- D. PIERARDII* Roxb. Hort. Beng. 63, 1814 nom. & Fl. Ind. 3:482, 1832.
Epiphyte, on hill slopes flowers light rose in colour. Koupru, 1050-1350 m. *Deb* 2304.
- D. TRANSPARENS* Wall. ex Lindl. Gen. Sp. Orch. 79, 1830.
Epiphyte. On hill slopes. Khamsang & Koupru. *Deb* 2305, *Mukerjee* 2854.
- D. WATTII* Reichb. f. in Gard. Chron. 1888 (z): 725, 1888.
Epiphyte; stem slender; leaves linear; flowers on leafless stem. Manipur ex Hook. f. Fl. Brit. Ind. 6:726, 1893.
- ERIA CORONARIA* Reichb. f. in Walp. Ann. 6:271, 1861.
Epiphyte, flowers white, lip chocolate bands; yellow at the middle. Khanghui, 990 m. *Mukerjee* 3725.
- E. EXCAVATA* Lindl. ex Hook. f. Ic. Pl. t. 1846.
Epiphyte; flowers dull yellow, Sirohee, 2340 m. *Mukerjee* 3237.
- E. MUSCICOLA* Lindl. in Journ. Linn. Soc. 3:47, 1859.
Epiphyte. Leaves petioled, oblanceolate, apiculate. Raceme longer than the leaves; flowers very small. Kangpokpi. *Deb* 938.
- EULOPHIA BICARINATA* (Lindl.) Hook. f. Fl. Brit. Ind. 6:6, 1890.
Terrestrial. Racemes many flowered; perianth segments chocolate brown, lip white at middle. Chammu, *Mukerjee* 3023.
- E. CAMPESTRIS* Wall. ex Lindl. Gen. & Sp. Orchid. 185, 1830.
Terrestrial on open slopes. Raceme many flowered; flowers pale pink. Ukhrl, 1620 m. *Mukerjee* 2717.
- GALEOLA LINDLEYANA* Reichb. f. Xenia Orchid. 2:78.
A saprophyte, in partially shady place. Khanghui, 1530 m. *Mukerjee* 2917.
- GEODORUM DILATATUM* R. Br. in Ait. Hort. Kew. (ed. 2) 5:207, 1813.
Terrestrial herb. Kachai, 1440 m. *Mukerjee* 2949.
- GOODYERA FOLIOSA* (Lindl.) Benth. ex Hook. f. Fl. Brit. Ind. 6:113, 1890.
Terrestrial leafy herb. Leaves petioled, ovate lanceolate. Flowers yellow. Lamlong, 1800 m. *Mukerjee* 3395.
- G. PROCERA* Hook. Exot. Fl. t. 39, 1823.
Terrestrial herb. West Manipur ex C. B. Clarke (l.c. 73).
- HABENARIA ACUIFERA* Wall. ex Lindl. Gen. & Sp. Orch. 325, 1830.
Terrestrial leafy herb. On open slope; flower golden yellow; fairly common. *Deb* 22, 804; *Mukerjee* 2916 & 3461.
- H. ARIETINA* Hook. f. Fl. Brit. Ind. 6:138, 1890.
Terrestrial leafy herb. On open slope; flowers white, lip of flower pectinately winged; common up to 1800 m. *Deb* 897; *Mukerjee* 3268 & 1228.
- H. DENTATA* (Sw.) Schlechter in Fedde, Repert. Beih. 4:125, 1919.
Terrestrial in open slope, flowers white, side lobes of lip fimbriate. Common in Manipur at 1500-1800 m. *Deb* 1378; *Mukerjee* 3644 & 3655.
- H. LACERTIFERA* (Lindl.) Benth. Fl. Hongk. 362, 1861.
Terrestrial leafy herb. Mao 1800 m. *Deb* 2396.
- H. MALINTANA* (Blanco) Merr. Sp. Blanc. 112, 1918 & Ames. Orch. 6:276, 1920.
H. pelorioides Par. et Reichb. f.
Terrestrial leafy herb. Ukhrl & Sirohee, 1260 m. *Deb* 1078; *Mukerjee* 3523.

HABENARIA RENIFORMIS (D. Don) Hook. f. Fl. Brit. Ind. 6:152, 1890.

Terrestrial leafy herb. On edge of forests. Sungshung and Kangpokpi. *Deb* 938; *Mukerjee* 3529.

H. TRICHOSANTHA Wall. ex Hook. f. Fl. Brit. Ind. 6:138, 1890.

Terrestrial herb in the forest opening, particularly in regions where the forest has been replaced by grass and herbaceous growth. *Deb* 787.

HERMINIUM ANGUSTIFOLIUM Benth. & Hook. f. Gen. Pl. 3:622, et Fl. Brit. Ind. 6:129, 1894.

Terrestrial, small herb with linear leaves. On open slopes, *Mukerjee* 3227.

LIPARIS BISTRIATA Parish et Reichb. f. in Trans. Linn. Soc. 30:155, 1874.

Pseudobulbs elongate, leaves elliptic-oblong; flowers white. Maohing and Ukhrul 1800 m. *Deb* 995; *Mukerjee* 2881.

L. DISTANS C. B. Clarke in Journ. Linn. Soc. 25:71, 1889.

Pseudobulbs elongate. Leaves petioled. Outskirts of forests. Upper petals of flower, dull yellowish red. *Mukerjee* 3540.

L. VIRIDIFLORA (Bl.) Lindl. Gen. et Sp. Orch. 31, 1830. *Malaxis viridiflora* Bl.

L. longipes Lindl.

Terrestrial, West Manipur ex C. B. Clarke in J. Linn. Soc. 25:71, 1889.

L. PARADOXA (Lindl.) Reichb. f. in Walp. Ann. 6:218, 1861.

Terrestrial; leaves lanceolate, sheathing, sessile. Ukhrul and Limboi, *Mukerjee* 3258, 3386.

MALAXIS WALLICHII (Lindl.) *Deb* comb. nov.

Microstylis wallichii Lindl. Gen. Sp. Orchid. 20, 1830.

Terrestrial small herb with short stem; leaves ovate-lanceolate. Near bamboo groves at Chamu and Koupru. *Deb* 2229; *Mukerjee* 3020.

M. CONGESTA (Lindl.) *Deb* comb. nov.

Microstylis congesta (Lindl.) Reichb. f. in Walp. Ann. 6:206, 1861.

Terrestrial; stem short stout tuberous at the base at Ukhrul and Khaithong. *Deb* 518; *Mukerjee* 3257.

NERVILIA CRISPATA (Bl.) Schlecht. in K. Schum. & Lauterb. Nachtr. Fl. Deutsch. Sudsee 82, 1905.

Pogonia prainiana King.

Terrestrial, short lived herb with a single leaf. Inflorescence is produced when the leaf dries away. For this reason, the species escapes the notice of collectors, and appears to be a species of restricted distribution. Probably, it may be available throughout India. In Manipur

it is very common all over the hills of the territory at 900-2500 m. *Deb* 2497 & 2527.

OBERONIA MAXIMA Parish in Hook. f. Fl. Brit. Ind. 5:677, 1888.

Tufted epiphyte; leaves very long and broad; scape stout; flowers sessile. *Deb* 994.

O. PYRULIFERA Lindl. Fol. Orch. Ober. 15, 1852.

Epiphyte; leaves small ensiform. Tolloi 1530 m. *Mukerjee* 2880.

ODONTOCHILUS PUMILUS Hook. f. Ic. 2163, 1894 & Fl. Brit. Ind. 6:99, 1894.

Flowering time—July. Sirohee ex K. Ward (l.c.).

OTOCHILUS ALBA Lindl. Gen. & Sp. Orchid. 35, 1830.

Epiphyte; pseudobulb subcylindrical; stem articulate, branched, leaves elliptic-lanceolate; flowers small, white; common in East and North Manipur. *Deb* 1892; *Mukerjee* 3039.

O. PORRECTA Lindl. Gen. & Sp. Orchid. 36, 1830.

Epiphyte, pseudobulbs clavate; stem articulate branched; leaves elliptic lanceolate, long petioled. Koupru, 2100 m. *Deb* 1435.

PECTEILIS SUSANNAE Raf. Fl. Tellur 2:38, 1836.

Habenaria susannae (L.) R. Br. Prod. 312, 1810.

Open slope, flowers white with pale, green sepals. *Mukerjee* 3463.

PERISTYLUS MANNII (Reichb. f.) *Mukerjee* in Notes Roy. Bot. Gard. Edin. 21: 153, 1953.

Coeloglossum mannii Reichb. f.

Habenaria gracillima Hook. f.

Terrestrial leafy herb. Near the edge of rocks. Ukhrul, 1350 m. *Mukerjee* 3731.

P. GOODYEROIDES Lindl. Gen. et Sp. Orch. 299, 1830.

Habenaria goodyeroides D. Don

Terrestrial leafy herb; stem stout. Flowers yellowish; common. *Deb* 1005.

P. STENOSTACHYUS Kraenzlin, Orch. Gen. et Sp. 1: 502.

Terrestrial on outskirts of forests. *Mukerjee* 3202.

P. TIPULIFERUS (Par. et. Reichb. f.) *Mukerjee* in Notes Roy. Bot. Gard. Edin. 21(3): 153, 1953.

Habenaria tipulifera Par. et. Reichb. f.

Terrestrial; leaves linear-lanceolate, acuminate. Outskirts of forests, open slopes, at Litan and Ukhrul. *Deb* 1088; *Mukerjee* 3364 & 3417.

PHAJUS FLAVUS Lindl. Gen. et Sp. 128. 1830.

P. maculatus Lindl.

Terrestrial orchid with very large leaves with yellow spots. Perianth segments pale yellow, greenish above, lip white below, stem yellow with orange in front

- margin, vertical orange bands in the inside. Lamlong. *Mukerjee* 2957.
- P. LONGIPES* (Hook. f.) Holtt., Gard. Bull. 11:286, 1947.
Calanthe longipes Hook. f.
C. gracilis Lindl.
 A terrestrial herb, stem tall; internodes long cylindrical; raceme laxly many flowered. Lamdom and Koupru, *Mukerjee* 2709 & *Deb* 1373.
- P. WALLICHII* Lindl. Gen. & Sp. Orchid. 126, 1830.
 Terrestrial; leaves large elliptic-lanceolate. Ukhrul, *Mukerjee* 2457.
- PHOLIDOTA ARTICULATA* Lindl. Gen. & Sp. Orchid. 38, 1830.
 Epiphyte with articulated stem; pseudobulbs 2 leaved; flowers cream colour, lip yellow at the tip. Sirohee, *Mukerjee* 3212.
- P. CALCEATA* Reichb. f. in Walp. Ann. 6:238, 1861.
 Epiphyte: pseudobulbs crowded on a slender densely rooting rhizome. Ukhrul, *Mukerjee* 2942.
- P. IMBRICATA* Lindl. in Hook. Exot. Fl. t. 138, 1823; Gen. & Sp. Orchid 37, 1830.
 Epiphyte. Kairengi 900 m. *Deb* 667.
- P. PROTRACTA* Hook. f. Ic. Pl. t. 1877.
 Epiphyte, flowers small, pale yellow, lip orange within. Khangkhui 2070 m.
- PHYLLOMPHAX GALEANDRA* (Reichb. f.) Schltr.
 Terrestrial. Open slopes; at Ukhrul and Nongmaiching. *Deb* 800; *Mukerjee* 3118.
- PLEIONE HOOKERIANA* (Lindl.) O. Kuntze, Rev. Gen. 680, 1891.
 Pseudobulb and lower portion of stem spotted purple. Sirohee, *Mukerjee* 3238.
- P. PRAECOX* (Sm.) D. Don, Prod. Fl. Nep. 37, 1825.
 Flowers purple, lip with yellow lines at the middle. Sirohee, *Mukerjee* 3655.
- SACCOLABIUM AMPULLACEUM* Lindl. Sert. Orchid. t. 17.
 Epiphyte. West Manipur, 900 m. ex C. B. Clarke in J. Linn. Soc. 25:73, 1889.
- SATYRIUM NEPALENSE* D. Don, Prod. Fl. Nep. 26, 1825.
 Terrestrial, leafy, erect herb; flowers pink. Grassy field. Sirohee, 2250 m. *Mukerjee* 3392.
- SPATHOGLOTTIS PUBESCENS* Lindl. Gen. & Sp. Orchid. 120, 1830.
 Terrestrial; flowers-wings of lip red. Ukhrul, 1800 m. *Mukerjee* 3246.
- SPIRANTHES SINENSIS* (Pers) Ames, Orchid. 2:53, 1908.
 Open slopes, at Sirohee, 2070 m. *Mukerjee* 3732.
- STAUROPSIS UNDULATUS* (Lindl.) Benth. ex Hook. f. Fl. Brit. Ind. 6:27, 1890.
 Terrestrial. Nongbi & Khamsang. *Mukerjee* 2726 & 2805.
- THUNIA ALBA* Reichb. f. in Bot. Zeit. 10:764, 1852.
Phajus albus Lindl. Tankhul name 'Phamwan'.
 Terrestrial. Leaves distichous. Raceme terminating the leafy stem, flowers large, white, lip yellow with orange stripes. Ukhrul, 1440 m. *Mukerjee* 2969.
- TROPIDIA CURCULIGOIDES* Lindl. Gen. & Sp. Orchid. 497, 1830.
 Terrestrial. Chatrik, *Mukerjee* 3702.
- VANDA COERULEA* Griff. ex. Lindl. Bot. Reg. t. 30, 1847.
 Manipuri name—'Koach lei'.
 Epiphyte; stem leafy. Flowers large pale blue. Thangmeiband, and Ukhrul, 1800 m. *Deb* 1957; *Mukerjee* 3480.
- V. PARISHII* Veitch & Reichb. f. Xenia Orch. 2:138.
 Epiphyte. Kachai, 1080 m. *Mukerjee* 2946.
- VANILLA PLANIFOLIA* Andr. Bot. Rep. t. 538, 1811.
 The climbing shrub with large green flowers (lip purple). Manipur ex Kingdon-Ward. (l.c.)
- ZEUXINE NERVOSA* Benth. in Gen. Pl. 3:600, 1883; Hook. f. Fl. Brit. Ind. 6:108, 1890.
Monochilus nervosus Lindl.
 Terrestrial herb. West Manipur ex C. B. Clarke in J. Linn. Soc. 25:73, 1889.

JUNCACEAE

- JUNCUS EFFUSUS* Linn. Sp. Pl. 326, 1753.
 A small herb growing in moist soil and in drying jheels. *Deb* 2045.

- J. PRISMATOCARPUS* R. Br. Prodr. 259, 1810.
 Small herb up to 60 cm. long, tufted; flowers greenish brown. Abundant in marshy land or wet places. *Deb* 294 & 2201.

CYPERACEAE

- CAREX BACCANS* Nees in Wight Contrib. 122, 1834.
 Herb, up to about 1 m. high; leaves and bracts long over topping inflorescence; prefers shaded regions of river banks; also an epiphyte. Moreh and Nongmaiching. *Deb* 660 & 2200.

- C. BREVICULMES* R. Br. Prodr. 242, 1810.
 A slender herb. Manipur ex C. B. Clarke.

- CAREX BRUNNEA** Thunb. Fl. Jap. 38, 1784. *Carex nepalensis* C. B. Clarke.
Herb with oblique rhizome. Manipur ex C. B. Clarke (l.c.)
- C. COMPOSITA** Boott. Carex 1:3, f. 8, 1858.
A herb with long narrow leaves. Ukhrul, *Mukerjee* 3309.
- C. CRUCIATA** Wahlenb. in Kongl. Vetensk. Acad. Stockh. 149, 1803 (non Nees).
A herb; leaves very long; inflorescence elongate of distant peduncled pyramidal compound panicles. *Mukerjee* 2619.
- C. FILICINA** Nees in Wight Contrib. 123, 1834.
Perennial, leaves very long; inflorescence pyramidal compound panicles. Very common in the valley. *Deb* 818, 1080 & 1312.
- C. HEBECARPA** C. A. Meyer in Petersb. Mem. Sav. Etrang 1:223, f. 12, 1831.
A herb, leaves and lower bracts very close together much overtopping inflorescence. Manipur, 1740 m. ex C. B. Clarke in Fl. Brit. Ind. 6:747.
- C. MUNIPOORENSIS** C. B. Clarke in Hook. f. Fl. Brit. Ind. 6:729, 1894.
A glabrous herb with woody rhizome; leaves and bracts narrow overtopping inflorescence. Japvo, 2850 m. *Watt* 6894.
- C. INSIGNIS** Boott. Carex 1:5, f. 14, 1856.
Perennial herb, glabrous; leaves many shorter than inflorescence. Ukhrul, *Mukerjee* 2691; C. B. Clarke 3750.
- C. NEMOSTACHYS** Steud. in Flora 29:23, 1846.
Robust herb. Ukhrul, *Mukerjee* 2978.
- C. NUBIGENA** D. Don in Trans. Linn. Soc. 14:326, 1825.
Perennial herb. Ukhrul, *Mukerjee* 2705.
- C. PHACOTA** Spreng. Syst. 3:826, 1826.
A glabrous herb with woody rhizome. Ukhrul, *Mukerjee* 2798.
- C. SPECIOSA** Kunth, Enum. Pl. 2:504, 1837.
A glabrous herb with perennial rhizome. Ukhrul & North Manipur ex C. B. Clarke.
- C. STRAMENTITIA** Boott. ex Boeck. in Linnaea 90:351.
A herb with woody stout rhizome; leaves very long. Nongmaijing, *Deb* 2200.
- C. WALLICHIANA** PRESCOTT ex C. B. Clarke in Fl. Brit. Ind. 6:747, 1894.
A herb with long leaves. North Manipur & Ukhrul, *Mukerjee* 2838 & 2495.
- CYPERUS DIFFORMIS** Linn. Cent. Pl. 2:6, 1756.
Annual, glabrous herb; stem triquetrous at top; inflorescence umbellate. In moist low waterlogged situations; common in the territory. *Deb* 1633.
- C. DIGITATUS** Roxb. Fl. Ind. 1:205, 1820.
A herb. Manipur ex C. B. Clarke.
- C. DISTANS** Linn. f. Suppl. 103, 1781.
An annual with large compound umbels. Herb in moist situation. Litan and Ukhrul, *Deb* 1099; *Mukerjee* 3173.
- C. GLOBOSUS** All. Fl. Pedem. 49, 1785.
Pycnus capillaris Nees
A herb with tufted stem. Ukhrul, *Mukerjee* 5306.
- C. KYLLINGIA** Endl. Cat. Hort. Acad. Vindob. 1:94, 1842.
Kyllinga monocephala Rottb.
A nearly glabrous herb. Stem erect simple leafy below, common. *Deb* 1039, 1287; *Mukerjee* 2983.
- C. PANGOREI** Rottb. Descr. & Icon. 31, t. 7, f. 3, 1773.
C. corymbosus Kunth
C. tegetum Roxb.
Herb. North Manipur ex C. B. Clarke.
- C. PILOSUS** Vahl, Enum. 2:354, 1806.
A small herb with erect simple stem, leafy at the base. Inflorescence umbellate. Rare. *Bor* 21275.
- C. ROTUNDUS** Linn. Sp. Pl. 45, 1753.
Aquatic perennial, glabrous; rhizome thickened into ovoid, black, woody tubers. Grows in moist situation and in shallow water. *Deb* 2461.
- ELEOCHARIS AFFLATA** Steud. Syn. Pl. Cyp. 76, 1855.
Glabrous herb; stems erect without nodes; leaves absent. Ukhrul, *Mukerjee* 2538.
- E. PLANTAGINEA** R. Br. Prod. 224, 1810.
Glabrous herb; stems robust terete transversely septate when dry; spikelets fuscous straw coloured. Common in marshy places forming large societies. Koirengi, *Deb* 2585.
- FIMBRISTYLIS ANNUA** Roem. var. *PAUCISPICULATA* Blatt. & Mc. C. in Journ. Bom. Nat. His. Soc. 37:544, 1934.
Chingmeirong, *Deb* 893.
- F. COMPLANATA** Link. Hort. Berol. 1:292, 1827.
Herb with tufted stem flattened under umbel. Litan Hill, *Deb* 1555.
- F. DIPHYLLA** Vahl, Enum. 2:289, 1806.
Scirpus diphylla Retz.
Herb with tufted stem. Umbels sometimes reduced to 1 spikelet. Common, *Deb* 2529.

FIMBRISTYLIS DIPHYLLA Vahl var. *ANNUA* Roem. & Sch.
A small herb. *Mukerjee* 2968.

F. DISTICHA Boeck in *Linnaea* 38:393, 1874.
Stem erect slender base leafy; umbel slender lax.
Shugnu, Deb 2658.

F. FERRUGINEA Vahl, *Enum.* 2:291, 1806.
A tufted herb. Inflorescence an umbel; bracts shorter than the umbel. This is most common herb of this family, in the valley. *Deb* 515 & 1286.

F. MILIACEA Vahl, *Enum.* 2:287, 1806.
A herb. Found in the valley. *Bor* 21342.

F. QUINQUEANGULARIS Kunth forma *PENTAGONA* Clarke.
A glabrous annual. North Manipur ex C. B. Clarke.

FUIRENA GLOMERATA Lam. *Illustr.* 1:150.
A herb; stem bearing leaves or leaflike bracts even in its upper half; leaf grasslike, base sheathing glumes imbricate; strongly-aristate. Common in rice fields. *Koirengi, Deb* 2589.

JUNCCELLUS ALOPECUROIDES C. B. Clarke in Hook. f. *Fl. Brit. Ind.* 6:595, 1893.
Annual herb; stem erect simple leafy near the base; inflorescence umbellate. In moist situation, Imphal river bed. *Deb* 1641.

MARISCUS CYPERINUS Vahl, *Enum.* 2:377, 1806.
A herb with very short rhizome; leaves and bracts grasslike, umbel simple. *Sepramina, Deb* 1125.

RYNCHOSPORA WALLICHIANA Kunth, *Enum. Pl.* 2:289, 1837.
A small herb with tufted trigonous stem. *Ukhrul, Mukerjee* 3256.

SCIRPUS ERECTUS Poir. *Encycl.* 6:761; 1806.
A glabrous herb; stem terete; spikelets in a single lateral head. *Koupru, Deb* 1431.

S. MUCRONATUS Linn. *Sp. Pl.* 50, 1753.
Aquatic herb; stem robust triquetrous; forms large societies. This is used for making mats. *Deb* 912.

S. TERNATANUS Reinw. in *Miq. Fl. Ind. Bat.* 3:307, 1860.
S. chinensis Munro
A glabrous herb; stems long; leaves long, scabrous on margins. Forms societies in swamps. *Ukhrul, Mukerjee* 2979.

SCLERIA ELATA Thw. var. *DECORANS* C. B. Clarke in Hook. f. *Fl. Brit. Ind.* 6:690, 1894.
A glabrous herb; stem erect, leaf bearing; panicle dark-red. *Yangjing, Deb* 2694.

S. TESSELLATA Willd. *Sp. Pl.* 4:315, 1805.
A small leafy herb. Rare, Manipur ex C. B. Clarke.

GRAMINEAE

AGROSTIS MICRANTHA Steud. *Syn. Pl. Glum* 1:170, 1854.
A perennial tufted grass, in Langol hill and Ukhrul. *Deb* 2087; *Mukerjee* 3401.

A. WARDII Bor in *Kew Bull.* 1949:444, 1949.
Sirohee. Kashong 2800 m. ex Bor.

ALOPECURUS GENICULATUS Linn. *Sp. Pl.* 60, 1753.
An annual or perennial herb; fairly common in Aowaching.

ANDROPOGON ASCINODES C. B. Clarke in *Linn. Soc.* 25:87, 1889.
A. apricus Hook. f. (non Trin.)
A perennial grass at Pallel. *Bor* 15468.

A. MUNROI C. B. Clarke in *J. Linn. Soc.* 25:87, 1889.
A perennial grass. C. B. Clarke 2084.

ANTHOXANTHUM CLARKEI (Hook. f.) Ohri in *Bull. Tokyo Sci. Mus.* 18:8, 1947.
Hierochloa clarkei Hook. f. *Fl. Brit. Ind.* 7:223, 1897.
Perennial. Sirohee. *Mukerjee* 3521.

APLUDA MUTICA Linn. *Sp. Pl.* 82, 1753.
A leafy perennial grass in the valley.

APOCOPIS PALEACEA (Trin.) Hochr. in *Bull. New York Bot. Gard.* 6:262, 1910.
Ischaemum paleaceum Trin.
A. royleana Nees
A perennial grass. *Watt* 6827.

ARUNDINELLA BENGALENSIS (Spreng.) Druce in *Rep. Bot. Exchang. Club. Brit. Isles* 605, 1916. *Panicum bengalense* Spreng. *Arundinella wallichii* Nees ex Steud. *A. stricta* (Roxb.) Janowsky.
A perennial grass, in the valley.

A. DECEMPEDALIS (O. Kuntze) Janowsky in *Fedde, Rep. Spec. Nov.* 17:84, 1921.
Panicum decempedale O. Kuntze. *Arundinella clarkei* Hook. f. A reed-like tall stout perennial grass; fairly common in the valley. *Deb* 1033.

A. NEPALENSIS Trin. *Gram. Panic.* 62, 1826.
A. brasiliensis Raddi.
Common in the hills. 750-1200 m.

A. SETOSA Trin. *Gram. Panic.* 63, 1826.
A. mutica Nees ex Steud.
A. capillaris Hook. f.
A perennial grass. Culms slender, erect from a tuberous rhizome clothed with the wooly bases of the leaf sheaths. *Deb* 2199.

ARUNDINARIA KURZII Gamble, Bamb. Brit. Ind. 25. t. 1896.

A bushy shrub. This is a Burmese plant. Mao 210 m. *Deb* 1820.

ARUNDO DONAX Linn. Sp. Pl. 81, 1753.

A perennial with an erect culm and a creeping rhizome, gregarious near streams. The young leaves are eaten by cattle. Common in the valley, *Mukerjee* 2492.

AVENA SATIVA Linn. Sp. Pl. 79, 1753.

A herb, cultivated in the valley. *Deb* 2005.

BAMBUSA BALCUA Roxb. Hort. Beng. 25, 1814, nom. nud. & Fl. Ind. 2:196, 1832.

A tall, stout bamboo, nodes swollen; lower nodes with hard leafless branches cultivated near the homestead for domestic purposes. Central and West Manipur, *Deb* 2391.

B. KHASIANA Munro in Trans. Linn. Soc. 26:97, 1868.

A tall bamboo. Manipur ex Bor.

B. KINGIANA Gamble, Bamb. Brit. Ind. 46. t. 42, 1896.

Leaves linear lanceolate, tessellate. This is a Burmese plant. Irong, *Deb* 793.

B. PALLIDA Munro in Trans. Linn. Soc. 26:97, 1868.

A caespitose bamboo growing in thick clumps. Chamu 1500 m., *Mukerjee* 3051.

B. VULGARIS Schrader in Wendl. Coll. Pl. 2:26, 1810.

A moderately sized bamboo with yellow stripes on the culms. Cultivated in West and Central Manipur for domestic purposes. *Deb* 1663.

BOTHRIOCHLOA INTERMEDIA (R. Br.) A. Camus in Ann. Soc. Linn. Lyon, n.s. 76:164, 1931.

Andropogon intermedius R. Br.

Perennial with tufted culms. Common in the valley.

BRACHYPODIUM SYLVATICUM (Huds.) P. Beauv. Agrost. 101, 1810.

Annual grass. Common. Saprameina. *Deb* 1135; *Mukerjee* 3307.

BRACHIARIA VILLOSA (Lamk.) A. Camus in Lacomte, Flor. Gén. Indo-Chine, 7:433, 1923.

Panicum villosum Lamk.

Annual, slender 20-40 cm. high, rooting at the base. Saprameina, *Deb* 1111.

CAPILLIPEDIUM PARVIFLORUM Stapf in Dyr. Fl. Trop. Afr. 9:169, 1917.

Andropogon micranthus Kunth

A perennial grass. *Bor* 15466.

C. PLANIPEDICELLATUM Bor in Kew Bull. 1949, 222. 1949.

"A grass in swamps—spikelets purple. Pallel, Manipur" ex Bor. (l c.)

CEPHALOSTACHYUM FUCHSIANUM Gamble, Bamb. Brit. Ind. 107, t. 94, 1896.

A medium sized arborescent, semi-scandent bamboo. Culms soft, thin walled. Mao 210 m. *Deb* 1731.

C. LATIFOLIUM Munro in Trans. Linn. Soc. 26:140, 1868.

A small scrambling bamboo. Manipur ex Bor.

C. PALLIDUM Munro in Trans. Linn. Soc. 26:140, 1868.

A shrubby bamboo. Manipur ex Bor.

C. PERGRACILE Munro in Trans. Linn. Soc. 26:141, 1868.

An arborescent tufted bamboo. *Deb* 1970.

CENTOTHECA LAPPACEA Desv. in Nouv. Bull. Soc. Phil. 2:189, 1810.

A perennial grass. Manipur ex C. B. Clarke.

CHIMONOBAMBUSA KHASIANA Nakai in J. Arn. Arbor. 6:151, 1925.

Arundinaria khasiana Munro.

A thick bushy shrub. *Mukerjee* 1948.

CHIONACHNE KOENIGII (Spreng.) Thw. Enum. Pl. Zeyl. 357, 1864.

Coix koenigii Spreng.

Coix barbata Roxb.

Polytoca barbata Stapf in Hook. f.

A robust perennial grass. North Manipur ex C. B. Clarke in J. Linn. Soc. 25:84, 1889.

CHRYSOPOGON ACICULATUS (Retz.) Trin. Fund. Agrost. 188, 1820.

Andropogon aciculatus Retz.

A very common perennial grass growing in open fields and hills. Culms slender, creeping rooting and branching at the lower nodes; rhizomes thick and creeping. Cattle graze this before flowering. Inflorescence attacked by a fungous disease, is a common occurrence. Common throughout the territory. *Deb* 722 & 2082.

COELORHACHIS STRIATA (Nees) A. camus in Ann. Soc. Linn. Lyon, n.s. 68, 197, 1921.

Rottboellia striata Nees ex Steud.

Perennial grass. *Mukerjee* 3319.

COIX GIGANTEA Koenig ex Roxb. Hort. Beng. 66. 1814 nomen, et in Fl. Ind. 3:570, 1832.

Coix lacryma-jobi var. *gigantea* stapf ex Hook. f.

A tall erect perennial grass, upto 3 m. high. Frequently seen in hills by the side of marshy places. *Deb* 2367.

- COIX LACRYMA-JOBI Linn. Sp. Pl. 972, 1753.
C. lacryma Linn.
 An annual grass, cultivated by hill people. The grain is used as food as a substitute for rice. *Deb* 1178; *Mukerjee* 3522.
- C. LACRYMA-JOBI Linn. var. MAYUEN Stapf ex Hook. f. Fl. Brit. Ind. 7:100.
C. mayuen Roman et.
 Cultivated by hill people for the grains. *Mukerjee* 3171.
- CYMBOPOGON CITRATUS Stapf in Kew Bull. 1906:322-357, 1906.
Andropogon citratus DC.
 A tall perennial grass containing aromatic oil in leaves. Recently introduced at Imphal. *Deb* 2392.
- C. CLANDESTINUS Stapf in Bull. Imp. Inst. London 27:458, 1929.
Andropogon schoenanthus Linn. sub-sp. *clandestinus* Hack.
 A perennial grass with slender culms. North Manipur ex C. B. Clarke in J. Linn. Soc. 25:87. 1889.
- C. KHASIANUS (Hack.) Stapf ex Bor. Ind. For. Rec. (Bot). 1(3):92, 1938.
Andropogon nardus var. *hasianus* Hack.
 A perennial tall grass up to 2 m. high. Very common all over Manipur. *Deb* 1098, 1217; *Mukerjee* 3322.
- C. NARDUS Rendle in Cat. Welw. Afr. Pl. 2:155, 1899.
Andropogon nardus Linn.
 An aromatic caespitose perennial grass, often met with in cultivation. *Deb* 2088.
- CYNODON DACTYLON (Linn.) Pers. Syn. Pl. 1:85, 1805.
Panicum dactylon Linn.
 A perennial small grass extensively creeping by scaly rhizome. Very common in plains and hills ascending up to 1800 m; gregarious on lightly trodden path. An excellent fodder grass. *Deb* 2083.
- DENDROCALAMUS HAMILTONII Nees et Arn. ex Munro, in Trans. Linn. Soc. 26:151, 1868.
 A tall bamboo; abundant in Jhiri Subdivision as recorded by Kaith in his report on working of Manipur Forests.
- DICHANTHIUM ANNULATUM (Forsk.) Stapf in Fl. Trop. Afr. 9:178, 1917.
Andropogon annulatum Forsk.
 A densely caespitose perennial. *Deb* 530.
- DIGITARIA PRURIENS Buese in Miq. Pl. Jungh. 379, 1854
Paspalum sanguinale Hook. f. (in part) non Lamk.
 Culms decumbent and creeping at the base. Common in and around the valley. *Deb* 1365.
- ECHINOCHLOA COLONUM Link. Hort. Berol. 209, 1827.
Panicum colonum Linn.
 An annual, growing commonly in waterlogged situations. This is a good fodder grass. *Deb* 840, 841, 1587 & 2086.
- E. CRUS-PAVONIS (H.B.K.) Schult. Syst. veg. 2. Mant. 269, 1824.
 An annual; culms tall spongy below. Common in paddy fields. *Deb* 769 & 866.
- E. CRUS-GALLI P. Beauv. Agrost. 53, 161, 1812.
Panicum crus-galli Linn.
 Common in paddy fields. *Deb* 867 & 1666.
- E. FRUMENTACEA Link. Enum. Hort. Berol. 1:204, 1827.
Panicum frumentaceum Roxb.
 A robust annual at Kakching. *Deb* 1244.
- E. STAGNINA (Retz.) P. Beauv. Ess. Agrost. 53, 161, 171, 1812.
Panicum stagninum Retz.
 Perennial; common in marshes; sometimes partly submerged under water. *Deb* 544 & 765.
- ELEUSINE INDICA (Linn.) Gaertn., Fruct. 1:8, 1789.
 An annual. Manipur ex Bor, Grasses of Ind. Burma & Ceylon 493, 1960.
- ELYTROPHORUS SPICATUS (Willd) A. Camus in Lecomte. Fl. Gén. de l' Indo-Chine 7:547, 1923.
Dactylis spicata Willd.
Elytrophorus articulatus P. Beauv.
 An annual with tufted culms, at Kakching. *Deb* 1280.
- ERAGROSTIS GANGETICA (Roxb.) Steud. Syn. Pl. Glum. 1:266, 1854.
E. elegantula Stapf in Hook. f.
 A perennial gregarious species commonly found in wet ground on the margin of tanks and paddy fields. This is valued as a fodder. *Deb* 1564.
- E. NIGRA Nees ex Steud. Syn. Pl. Glum 1:267, 1854.
 A perennial plant, found in hilly tracts and at high elevations in Mao and Ukhrul. *Deb* 1728 & *Mukerjee* 3984.
- E. TREMULA Hochst. ex Steud. Syn. Pl. Glum 1:269, 1854.
 Annual. A good fodder grass; fairly common in the plains and in rice fields in Manipur.
- E. UNIOLOIDES (Retz.) Nees ex Steud., Syn. Pl. Glum 1:264, 1854.
 An annual grass; panicle reddish; prefers moist places. *Deb* 2090.
- ERIANTHUS ARUNDINACEUS (Retz.) Jeswiet in Arch. Suikerind. Nederl. In. 33; Medel. 399, 1925.
Saccharum arundinaceum Retz.
 Growing in clump, Fairly common. *Deb* 2203.

- E. PROCERUS (Roxb.) Raizada, Ind. For. Rec., N. S. 4(5):98, 1954.
Saccharum procerum Roxb.
A very tall grass. *Deb* 67.
- HACKELOCHLOA GRANULARIS O. Kuntze Rev. Gen. Pl. 776, 1891.
Manisuris granularis Linn. f.
Perennial. Yangjing, *Deb* 2681.
- HOLCOLEMA CANALICULATUM (Nees ex Steud.) Stapf & C. E. Hubb. in Kew Bull. 1929:246, 1929.
Panicum canaliculatum Nees ex Steud. Syn. Pl. Glum 1:55, 1854.
Chingmeirong & Kakching. etc. *Deb* 1161 & 1375.
- HYGRORYZA ARISTATA (Retz.) Nees ex Wight & Arn. in Edinb. New Phil. J. 15:380, 1833.
Leersia aristata (Retz.) Roxb.
Aquatic, floating grass forming mats on the surface of water. Culms spongy glabrous and branching. This species is very common in the Manipur valley.
- HYMENACHNE ASSAMICA (Hook. f.) Hitchc. in Lingnan Sci J. 7:222, 1931.
Panicum assamicum Hook. f.
Short erect herb; common in wet places in the valley. *Deb* 60.
- H. PSEUDO-INTERRUPTA C. Muell. in Bot Zeit. 19:333, 1861.
Hymenachne amplexicaulis (Rudge) Nees; Fl. Assam 5:218, 1940.
Panicum myuros H. B. K. (non Lamk.)
A herb in swamps.
Kakching.
- HYPARRHENIA GRIFFITHII Bor in Ind. For. Rec. (Bot.) 1(3):92, 1938.
A perennial grass with a creeping rhizome. This grass covers large areas on the 'Tillah's in Kakching. *Deb* 1225.
- IMPERATA CYLINDRICA (Linn.) P. Beauv. Agrost. 165, 1812.
MAJOR var. (Nees) C. E. Hubbard ex Hubb. et Vaughan, grass Maur. 96:1940.
Imperata cylindrica var. *koenigii* (Retz.) Dur. et Schinz.
A perennial grass. Very much variable in size; the depauperate forms scarcely 15 cm. while in open unaffected fields it may reach 2 m. or more. Very common in dry lands. This is used for thatching purposes. *Deb* 803, 2435.
- ISACHNE ALBENS Trin. Sp. Gram. 1, t. 85, 1826.
A tall perennial, common in the valleys. *Mukerjee* 3402.
- I. HIMALAICA Hook. f. Fl. Brit. Ind. 7:23, 1897.
An erect perennial common in marshes. *Deb* 1730 & *Mukerjee* 3211.
- I. PULCHELLA Roth ex Roem et. Schult. Syst. veg. ed. 15.2:476, 1817.
An annual at Kangpokpi.
- LEERSIA HEXANDRA Swartz Prodr. veg. Ind. Occ. 21, 1788.
Common in swamp and jheels. *Meebold* 6446.
- LEPTOCHLOA PANICEA (Retz.) Ohwi in Bot. Mag. Tokyo 55:311, 1941.
Poa panicea Retz.
- L. FILIFORMIS Roem & Schult. Syst. 2:580; Hook. f. Fl. Brit. Ind. 7:298, 1897.
An annual. *Watt*—Manipur.
- MELOCANNA BAMBUSOIDES Trin. in Spreng. Neue Entdeck 2:43, 1821.
Culms single, unbranched; fairly common growing gregariously over large areas. In 1952 this plant flowered at Moreh.
- MICROCHLOA INDICA (Linn. f.) P. Beauv. Agrost. 1812.
Microchloa setacea R. Br.
A perennial grass. *Bor* 15391.
- MICROSTAGIUM CILIATUM (Trin.) A. Camus in Ann. Soc. Linn. Lyon n.s. 68:201, 1921.
Pollinia ciliata Trin.
An annual. Ukhrul. *Mukerjee* 3734.
- MISCANTHUS NEPALENSIS (Trin.) Hack in DC., Monogr. Phan. 6:104, 1889.
A perennial grass. Ukhrul. *Mukerjee* 3735.
- NARENGA FALLAX (Balansa) Bor in Kew Bull. 1948:162, 1948.
Erianthus chrysothrix Hack.
A perennial about 2 m. tall; panicle densely flowered, covered with a very dense golden brown or rusty tomentum. Very common in south Manipur particularly in Shugnu and Wangjing hills. *Deb* 2661 & 2686.
- N. PORPHYROCOMA (Hance) Bor in Indian Forest. 66:267, 1940.
Eriochrysis porphyrocoma Hance.
Common all over the valley forming large societies.
- NEYRAUDIA REYNAUDIANA (Kunth) Keng ex Hitchc. Amer. J. Bot. 21:131, 1934.
Arundo raynaudiana Kunth
N. madagascariensis Hook. f. var. *zollingeri* Hook. f.
A reed like perennial grass. *Deb* 1664.

OPHIUROS EXALTATUS (Linn.) O. Kuntze, Rev. Gen. 2:780, 1891.

Aegilops exaltatas Linn.

Ophiurus corymbosus Gaertn. f.

O. corymbosus Hook. f.

A perennial. Leaves linear, glabrous.

O. MEGAPHYLLUS Stapf ex Haines, Bot. Bihar & Orissa, 1058, 1924.

A perennial stout grass. Leaves ensiform, hairy. *Bor* 15443.

OPLISMENUS COMPOSITUS P. Beauv. Ess. Agros. 54: 168, 1812.

Panicum compositum Linn.

A perennial grass at Ukhrul. *Mukerjee* 3635.

ORYZA MINUTA J. S. Presl ex C. B. Presl, Rel. Haenk. 1:208, 1830.

O. officinalis Wall. ex Watt, Dict. Econ. Prod. Ind. 5:501, 1891.

O. latifolia Hook. f. (non Desv.) var. *collina* Hook. f.

O. sativa var. *collina* Trin.

A perennial grass with subwoody roots stock; culms tufted. Lousipath.

O. RUFIPOGON Griff. Notul 3:5, 1851.

O. fatua Koen. ex Trin.

O. sativa vars. *rufipogon*, *coarctata*, *bengalensis* and *abuensis* Watt.

D. sativa Linn. var. *fatua* Prain

O. fatua var. *longiaristata* Ridl.

An annual growing in water or in swampy places. Very common in Lousi and Logtak. *Deb* 1852.

O. SATIVA Linn. Sp. Pl. 333, 1753. var. SATIVA.

It is said that there are 16 local varieties of paddy cultivated locally in this territory. *Deb* 470.

PANICUM PALUDOSUM Roxb. Hort. Beng 8. 1814, nom. & Fl. Ind. 1:310, 1820.

A perennial, base climbing or floating, rooting at the nodes, spongy; found in marshes in the valley. *Bor* 15436.

PASPALUM SCROBICULATUM Linn. Mant. 1:29, 1767.

Annual grass; very common all over the territory, in damp situation. *Deb* 471, 868. & *Mukerjee* 3182.

PENNISETUM TYPHOIDES (Burm. f.) Stapf & Hubbard in Kew Bull. 1933:271, 1933.

Alopecurus typhoides Burm. f.

Pennisetum typhoideum L. Rich.

P. glaucum (Linn.) R. Br.

Annual. Cultivated. *Deb* 3075.

PHRAGMITES KARKA (Retz.) Trin. ex Steud. Nom. (ed. 2) 2. 324, 1841. var. KARKA.

Arundo karka Retz.

A large and tall grass with close joined hollow stem. Inflorescence large, decompound. Very common in wet places all over the valley and the surrounding hills ascending to 1200 m.

POA ANNUA Linn. Sp. Pl. 68, 1753.

An annual at Ukhrul. *Mukerjee* 2484.

POGONATHERUM CRINITUM Kunth Enum. 1:478, 1833.

A perennial grass. *Mukerjee* 3163.

P. RUFO-BARBATUM Griff. Notul. 3:81, 1851.

Perennial; growing on rocks in hill streams. *Deb* 1098 & *Mukerjee* 2494.

P. PANICEUM (Lamk.) Hack. in All. Bot. Zeit 12:178, 1906.

Saccharum paniceum Lamk.

Pogonatherum saccharoideum P. Beauv.

A caespitose perennial; common in shady places in Chingmairong. *Deb* 536.

POLYPOGON MONSPELIENSIS (Linn.) Desf. Fl. Atlant. 1:67, 1798.

An annual tufted grass. *Mukerjee* 2490.

POLYTOCA ARGENTEA Trin. in Bull. Sci. Acad. Petersb. 1:71, 1836.

Andropogon sexastachyus Steud.

North-Manipur ex C. B. Clarke (l.c.)

P. DIGITATA (Linn. f.) Druce in Rep. Bot. Exch. Club, Brit. Isles 4:641, 1916.

P. BRACTEATA R. Br. in Bennett. Pl. Rar. Jav. Rar. 20, t. 5, 1838.

A perennial grass; said to be a good fodder. Wangjing. *Deb* 2727.

P. WALLICHIANA Benth. in J. Linn. Soc. (Bot.) 19:52, 1881.

A perennial grass at Ukhrul. *Mukerjee* 3320.

SACCHARUM OFFICINARUM Linn. Sp. Pl. 54, 1753.

This is cultivated for juice; red rot attacks the plant but it is not severe.

S. SPONTANEUM Linn. Mant. 2:183, 1771.

Perennial; tall, erect, solid, smooth plant with thick rhizome; common; leaves used for thatching.

SACCIOLEPIS INDICA A. Chase in Pro. Biol. Soc. Wash. 21:8, 1908.

Panicum indicum Linn. Mant. 2:184, 1771.

A tufted annual; common along hill sides at moist situations. *Deb* 2549 & 1313; *Mukerjee* 3330.

- SACCIOLEPIS MYOSUROIDES** (R. Br.) A. Camus in Lecomte in Fl. Gén. de l' Indo-Chine 7:460, 1922.
Panicum myosuroides R. Br.
Decumbent herb growing in moist places at Lamphel. *Deb* 1578.
- SCHIZACHYRIUM BREVIFOLIUM** (Sw.) Nees ex Büse in Miquel, Plant Junghn. 359, 1854.
Andropogon brevifolius Sw.
An annual found in Kakching. *Deb* 1231.
- SCLEROSTACHYA FUSCA** (Roxb.) A. Camus in Lecomte, Fl. Gén. de l' Indo-Chine 7:243, 1922.
Saccharum fuscum Roxb.
Common in the valley. Litan in open grass land.
- SEHIMA NERVOSUM** (Rottl. ex Willd.) Stapf in Prain, Fl. Trop. Afr. 9:36, 1937.
Andropogon nervosum Rottl. ex Willd.
A. philippinensis Merrill.
Thoubal. *Bor* 16956.
- SETARIA GLAUCA** P. Beauv. Agrost. 51, 169, 178, 1812.
Panicum glaucum Linn.
Annual, loosely tufted. Nongmaijing & Wangjing. *Deb* 801 & 2632.
- S. ITALICA** P. Beauv. Agrost. 51, 170, 178, 1812.
Panicum italicum Linn.
An annual cultivated by the hill tribes. *Mukerjee* 3239.
- S. PALMIFOLIA** (Koenig) Stapf in J. Linn. Soc. (Bot.) 42:186, 1914.
Panicum palmaefolium Koenig
P. plicatum Willd. (non Lamk.)
A perennial grass. Litan, Ukhrul & Kanglatombi. *Deb* 1087 & *Mukerjee* 3276.
- SORGHUM NITIDUM** Pers. Synops. Pl. 1:101. 1805.
Andropogon nitidus Kunth
A. serratum Thunb.
A tall tufted erect grass. *Mukerjee* 3316.
- SPOROBOLUS DIANDER** (Retz.) P. Beauv. Agrost. 26, 147, 178, 1812.
Agrostis diandra Retz.
Common in the valley.
- S. INDICUS** Auctt. non (Linn.) R. Br. Prod. 170, 1810.
Common in the valley.
- THEMEDA CAUDATA** (Nees) A. Camus in Lecomte, Fl. Gén. de l' Indo-Chine 7:364, 1922.
Anthistiria caudata Nees
Themeda gigantea Hack. Sub-sp. *caudata* (Nees) Hack., Mon. Androp. 676, 1889.
A tall reed like grass growing in the hills.
- T. VILLOSA** (Poir.) A. Camus in Lecomte, Fl. Gén. de l' Indo-Chine 7:364, 1922.
Anthistiria villosa Poir., Encycl. Suppl. 1: 393.
Themeda gigantea (Cav.) Hack. subsp. *VILLOSA* Hack.
A large reed-like grass, growing gregariously along the banks of rivers. *Bor* 15450.
- THYRSIA ZEA** (Clarke) Stapf in Hook. Ic. Pl. 31, 1922.
Rottboellia zea C. B. Clarke in J. Linn. Soc. (Bot.) 25:86, 1889.
Tall perennial grass looking like reed. *Mukerjee* 3424.
- THYSANOLAENA MAXIMA** (Roxb.) O. Ktze. Rev. Gen. Pl. 2:794, 1891. *Thysanolaena agrostis* Nees
A perennial grass; tall, hard and glabrous, growing in open places up to 1200 m. The panicles are used for making brooms. *Deb* 363.
- TRITICUM AESTIVUM** Linn. Sp. Pl. 85, 1753.
Triticum vulgare Vill.
This plant has been brought under cultivation in Manipur in recent years. *Deb* 2460.
- ZEa MAYS** Linn. Sp. Pl. 971, 1753.
Tall, stout, annual, extensively cultivated both in the valley and hills. *Deb* 2390.
- ZIZANIA LATIFOLIA** (Griseb.) Stapf in Kew Bull. 1909: 385, 1909.
Z. latifolia (Griseb.) Turcz. Bull. Soc. Nat. Mosc. 105. 1838. nomen.
An aquatic perennial with well-developed stolons and rhizomes; culms erect glabrous very thick and spongy below. It is a valuable food for the immigrating birds in cold season in Logtak. The bases of culms are used as vegetable. *Deb* 2550.

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